INDUSTRIAL ARTS - ELECTRIC POWER DISTRIBUTION LINE CONSTRUCTION NC II

(320 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)		
2.	Agricultural Crops Production (NC II)++	480 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 (NC II)
5.	Animal Production (NC II) + *When updated, this CG will become the following:* *1. Animal Production (Poultry-Chicken) (NC II);* *2. Animal Production (Ruminants) (NC II); and* *3. Animal Production (Swine) (NC II)*	480 hours	
6.	Aquaculture (NC II)	640 hours	
7.	Artificial Insemination (Ruminants) (NC II)	160 hours	Animal Production (NC II)
8.	Artificial Insemination (Swine) (NC II)	160 hours	Animal Production (NC II)
9.	Agricultural Crops Production (NC I)	320 hours	
10.	Fish Capture (NC II) ++	640 hours	
11.	Fishing Gear Repair and Maintenance (NC III)	320 hours	
12.	Fish-Products Packaging (NC II)	320 hours	
13.	Fish Wharf Operation (NC I)	160 hours	
14.	Food (Fish) Processing (NC II)	640 hours	
15.	Horticulture (NC II) +	640 hours	
16.	Horticulture (NC III)	640 hours	Horticulture (NC II)
17.	Landscape Installation and Maintenance (NC II)	320 hours	Agricultural Crops Production (NC I)
18.	Organic Agriculture (NC II)	320 hours	Agricultural Crops Production (NC I)
19.	Pest Management (NC II)	320 hours	Agricultural Crops Production (NC I)
20.	Rice Machinery Operation (NC II)	320 hours	Agricultural Crops Production (NC I)
21.	Rubber Processing (NC II)	320 hours	
22.	Rubber Production (NC II)	320 hours	
23.	Slaughtering Operation (NC II)	160 hours	Animal Production (NC II)

+CG to be updated by December 2015

++CG to be uploaded by December 2015

HOME ECONOMICS

	Specialization	Number of Hours	Pre-requisite
1.	Attractions and Theme Parks (NC II)	160 hours	
2.	Barbering (NC II)	320 hours	
3.	Bartending (NC II)	320 hours	
4.	Beauty/Nail Care (NC II)	160 hours	40 hours of the subject during exploratory Grade 7/8
5.	Bread and Pastry Production (NC II)	160 hours	
6.	Caregiving (NC II)	640 hours	40 hours of the subject during exploratory Grade 7/8
7.	Commercial Cooking (NC III)	320 hours	Cookery (NC II)
8.	Cookery (NC II)	320 hours	40 hours of the subject during exploratory Grade 7/8
9.	Dressmaking (NC II)	320 hours	40 hours of the subject during exploratory Grade 7/8
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) [+]	160 hours	
13.	Front Office Services (NC II)	160 hours	40 hours of the subject during exploratory Grade 7/8
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) [+]	160 hours	
21.	Local Guiding Services (NC II)	160 hours	
22.	Tailoring (NC II)	320 hours	40 hours of the subject during exploratory Grade 7/8
23.	Tourism Promotion Services (NC II)	160 hours	
24.	Travel Services (NC II)	160 hours	
25.	Wellness Massage (NC II)	160 hours	

[+]CG to be updated by December 2015

INDUSTRIAL ARTS - ELECTRIC POWER DISTRIBUTION LINE CONSTRUCTION NC II

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INDUSTRIAL ARTS

	Specialization	Number of Hours	Pre-requisite
1.	Automotive Servicing (NC 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.	Consumer Electronics Servicing (NC II) +	640 hours	
7.	Domestic Refrigeration and Airconditioning (DOMRAC) Servicing (NC II)	640 hours	
8.	Driving (NC II)	160 hours	
9.	Electrical Installation and Maintenance (NC II)	640 hours	
10.	Electric Power Distribution Line Construction (NC II)	320 hours	Electrical Installation and Maintenance (NC II)
11.	Electronic Products Assembly and Servicing (NC II) ++ *(CG under construction based on Consumer Electronics Servicing (NC II) CG)*	640 hours	
12.	Furniture Making (Finishing) (NC II) +	480 hours	
13.	Instrumentation and Control Servicing (NC II)	320 hours	Electronic Products Assembly and Servicing (EPAS) (NC II)
14.	Gas Metal Arc Welding (GMAW) (NC II)	320 hours	Shielded Metal Arc Welding (SMAW) (NC II)
15.	Gas Tungsten Arc Welding (GTAW) (NC II)	320 hours	Shielded Metal Arc Welding (GMAW) (NC II)
16.	Machining (NC I) ++	640 hours	
17.	Machining (NC II)	640 hours	Machining (NC I)
18.	Masonry (NC II)	320 hours	
19.	Mechatronics Servicing (NC II)	320 hours	Consumer Electronics Servicing (NC II)
20.	Motorcycle/Small Engine Servicing (NC II)	320 hours	
21.	Plumbing (NC I)	320 hours	
22.	Plumbing (NC II)	320 hours	Plumbing (NC I)
23.	Refrigeration and Air-Conditioning (Packaged Air-Conditioning Unit [PACU]/Commercial Refrigeration Equipment [CRE]) Servicing (NC III)	640 hours	Domestic Refrigeration and Airconditioning (DOMRAC) Servicing (NC II)
24.	Shielded Metal Arc Welding (NC I)	320 hours	
25.	Shielded Metal Arc Welding (NC II)	320 hours	Shielded Metal Arc Welding (NC I)
26.	Tile Setting (NC II)	320 hours	
27.	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	1. Telecom OSP and Subscriber Line Installation (Copper Cable/POTS and DSL) (NC II) 2. Telecom OSP Installation (Fiber Optic Cable) (NC II)
3.	Computer Hardware Servicing (NC II) [+]	320 hours	
4.	Computer Programming (NC IV) [+] *When updated, this CG will become the following:* *1. Programming (.net Technology) (NC II)[++]* *2. Programming (Java) (NC II)[++]* *3. Programming (Oracle Database) (NC II)[++]*	320 hours	
5.	Computer System Servicing (NC II) [++] *(CG under construction based on Computer Hardware Servicing (NC II) CG)*	320 hours	
6.	Contact Center Services (NC II)	320 hours	
7.	Illustration (NC II)	320 hours	
8.	Medical Transcription (NC II)	320 hours	
9.	Technical Drafting (NC II)	320 hours	
10.	Telecom OSP and Subscriber Line Installation (Copper Cable/POTS and DSL) (NC II)	320 hours	Computer Hardware Servicing (NC II)
11.	Telecom OSP Installation (Fiber Optic Cable) (NC II)	160 hours	Telecom OSP and Subscriber Line Installation (Copper Cable/POTS and DSL) (NC II)

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INDUSTRIAL ARTS - ELECTRIC POWER DISTRIBUTION LINE CONSTRUCTION NC II

(320 hours)

Prerequisite: Electrical Installation and Maintenance NC II

Course Description:

This curriculum guide on Electric Power Distribution Line Construction NC II covers the knowledge, skills and attitudes to operate and maintain power distribution line tools and equipment in accordance with industry standards. It covers the core competencies, such as: i) operating and maintaining power distribution line tools and equipment, 2) erecting distribution line pole, 3) climbing the pole and installing pole assembly conductors, 4) installing distribution line equipment and devices, and 5) installing consumer services connection facility.

CONTENT	CONTENT STANDARD	PERFORMANCE STANDARD	LEARNING COMPETENCIES	CODE
Introduction 1. Basic concepts in Electric Power Distribution Line Construction 2. Relevance of the course 3. Career opportunities	The learner demonstrates an understanding of basic concepts and theories in Electric Power Distribution Line Construction.	The learner independently demonstrates common competencies in Electric Power Distribution Line Construction as prescribed in the TESDA Training Regulation.	1. Explain basic concepts in Electric Power Distribution Line Construction. 2. Discuss the relevance of the course. 3. Explore career opportunities in Electric Power Distribution Line Construction.	
PERSONAL ENTREPRENEURIAL COMPETENCIES AND SKILLS (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 PECS in relation to a practitioner	The learner demonstrates an understanding of one's PECS.	The learner recognizes his/her PECs and prepares an activity plan that aligns with that of an in Electric Power Distribution Line Construction practitioner/entrepreneur.	**LO 1. Recognize PECS needed in EPDLC NC II.** 1.1 Assess one's PECs: characteristics, attributes, lifestyle, skills, and traits. 1.2 Assess practitioner's PECS: characteristics, attributes, lifestyle, skills, and traits. 1.3 Compare one's PECS with those of a practitioner /entrepreneur. 1.4 Align one's PECS with those of a practitioner/entrepreneur.	**TLE_PECS9-12-00-1**

CONTENT	CONTENT STANDARD	PERFORMANCE STANDARD	LEARNING COMPETENCIES	CODE

INDUSTRIAL ARTS - ELECTRIC POWER DISTRIBUTION LINE CONSTRUCTION NC II

(320 hours)

CONTENT	CONTENT STANDARD	PERFORMANCE STANDARD	LEARNING COMPETENCIES	CODE
ENVIRONMENT AND MARKET (EM)				
1. Key concepts of environment and market 2. Products and 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 environment and market in relation to a career choice in EPDLC.	The learner independently generates a business idea based on the analysis of environment and market in HS.	**LO 1. Generate a business idea that relates with a career choice in EPDLC.** 1.1 Conduct SWOT analysis. 1.2 Identify the different products/services available in the market. 1.3 Compare different products/services in computer hardware servicing business. 1.4 Profile potential customers. 1.5 Profile potential competitors. 1.6 Generate potential business idea based on the SWOT analysis.	
LESSON 1: OPERATING AND MAINTAINING POWER DISTRIBUTION LINE TOOLS AND EQUIPMENT (OMPD)				
• Interpreting work instruction • Occupational health and safety standards • Distribution line tools and equipment - Proper handling of tools and equipment based on the manufacturer's data. ▪ Electrical safety ▪ Electric shock ▪ Electrocution ▪ Arc flash ▪ Arc blast • Safety in using tools and equipment	The learner demonstrates understanding of safety awareness in operating and maintaining power line tools and equipment.	The learner independently demonstrates safety awareness to operate and maintain power distribution line tools and equipment based on the training regulation of TESDA.	**LO 1. Plan and prepare for work.** 1.1 Interpret work instruction to determine job requirements. 1.2 Identify relevant occupational health and safety requirements in line with job specifications. 1.3 Identify and request relevant transmission line tools, equipment with job specifications.	**TLE_IAEPDLC 9-12OMPD-Ia-b-1**

INDUSTRIAL ARTS - ELECTRIC POWER DISTRIBUTION LINE CONSTRUCTION NC II

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CONTENT	CONTENT STANDARD	PERFORMANCE STANDARD	LEARNING COMPETENCIES	CODE
• Personal protective equipment • Power distribution line tools, equipment and their uses. • Testing power distribution line tools, equipment and hardware securing procedures			**LO 2. Prepare power distribution line tools and equipment.** 2.1 Obtain personal protective equipment (PPE) following job requirements. 2.2 Secure power distribution line tools, equipment and hardware in line with job requirements. 2.3 Test set of power distribution line tools following manufacturer's standards or recommendations.	**TLE_IAEPDLC9-12OMPD-Ic-d-2**
• Operating and maintaining power line tools and equipment • Safe handling and usage of tools and equipment • Tools and equipment and their uses • Classification and segregation of nonfunctional tools and equipment • Checking of tools and equipment condition • Operating line tools and equipment			**LO 3. Operate power distribution line tools and equipment.** 3.1 Read and understand of tools and equipment name plate data. 3.2 Identify tools and equipment according to classification and job requirements. 3.3 Check condition of tools and equipment. 3.4 Segregate non-functional tools and equipment and label according to classification. 3.5 Use power distribution line tools and equipment in line with job requirements.	**TLE_IAEPDLC9-12OMPD-Ie-f-3**
• Types of lubricant • Lubricating procedures • Inspection of tools and equipment • Types of maintenance • 5S (Proper Housekeeping) • Occupational health and safety procedure • Testing of tools and equipment			**LO 4. Perform basic prevention maintenance.** 4.1 Identify the appropriate lubricants according to types of equipment. 4.2 Can perform both breakdown or corrective preventive maintenance and condition monitoring 4.2.1 Trouble shooting of equipment. 4.3 Test the tools according to standard procedure. 4.4 Inspect the tools and equipment.	**TLE_IAEPDLC9-12OMPD-Ig-h-4**

CONTENT	CONTENT STANDARD	PERFORMANCE STANDARD	LEARNING COMPETENCIES	CODE
			4.5 Clean the work place in line with OHS regulation.	
• Inventory procedure • Tools and equipment store procedure • Storing facilities • Tool cabinet and shelves			**LO 5. Store tools and equipment.** 5.1 Conduct record inventory of transmission line tools and equipment as per company practices. 5.2 Store transmission line tools and equipment in accordance with manufacturer's specifications or company procedures.	**TLE_IAEPDLC9-12OMPD-Ii-j-5**
LESSON 2: ERECTING DISTRIBUTION LINE POLES (EDLP)				
• Types of pole and pole requirements • Pole hauling and pole spotting • Reading and interpreting staking sheet/work order • Pole loading and hauling procedure. • Safety in transporting pole	The learner demonstrates and understands the procedure in erection of distribution line poles and performs pole loading, hauling, spotting, pole digging, grounding and pole setting.	The learner independently demonstrates safety awareness in erecting the distribution line pole as well as transporting pole from stockyard to job site, performing pole spotting, digging, grounding and pole setting based on the training regulation of TESDA.	**LO 1. Load/haul distribution pole.** 1.1 Plan and prepare for work. 1.2 Check/inspect distribution line equipment in line with job requirements. 1.3 Perform pole hauling and pole spotting (unloading) based on staking sheet/work order. 1.4 Perform loading/unloading procedure for poles following safety requirements.	**TLE_IAEPDLC9-12EDLP-IIa-h-6**
• Ground digging procedure and technique • Types and classification of pole • Types and uses of pole erection materials/ equipment • Pole hole digging procedure • Installation of poles grounding procedure			**LO 2. Perform pole digging and grounding.** 2.1 Establish pole-hole digging depth requirements. 2.2 Install pole grounding in line with specification 2.3 Perform pole setting procedure in line with job requirements. 2.4 Perform ground digging following safety procedures.	**TLE_IAEPDLC9-12EDLP-IIh-j-IIIa-e-7**

CONTENT	CONTENT STANDARD	PERFORMANCE STANDARD	LEARNING COMPETENCIES	CODE
• Installation of pole grounding procedure • Types and uses of pole erection materials, and equipment • Pole setting/erection procedure • Backfilling procedure			**LO 3.Set pole erection.** 3.1 Check pole hole digging depth requirements. 3.2 Prepare pole erection materials and equipment. 3.3 Perform pole erection.	**TLE_IAEPDLC9-12EDLP-IIIf-j-IVa-c-8**
LESSON 3: CLIMBING THE POLE AND INSTALLING POLE ASSEMBLY CONDUCTORS (CPIP)				
• PPE work requirement • Types and classification of pole • Climbing gears, climbing equipment, safety climbing tools • Pole climbing guidelines and technique • Proper clothing • Wearing climbing gears • Wooden poles for hazards and risks • Body positioning when climbing poles • Fastening and unfastening safety straps • Installing anchor and guy	The learner demonstrates an understanding of the principles and concepts in climbing the pole and installing pole assembly.	The learner independently demonstrates climbing techniques dressing/framing of pole, installing pole anchor and guy wire based on the training regulation of TESDA.	**LO 1. Climb the pole.** 1.1 Plan and prepare work. 1.2 Inspect pole for hazard and risk. 1.3 Check climbing gears, climbing equipment and safety climbing tools. 1.4 Demonstrate pole climbing procedure in line with occupational health and safety standards.	**TLE_IAEPDLC9-12CPIP-IVc-j-9**

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CONTENT	CONTENT STANDARD	PERFORMANCE STANDARD	LEARNING COMPETENCIES	CODE
• Use of tools and materials in pole top assembly • Types of pole top assembly • Procedures in installing pole top assembly • Construction specification manual related to pole dressing			**LO 2. Dress/frame the pole.** 2.1 Prepare tools and materials for pole top assembly. 2.2 Perform boring in accordance with the construction specification. 2.3 Perform pole top assembly in accordance to safety standards.	**TLE_IAEPDLC9-12CPIP-Ia-h-10**
• Construction specification manual related to anchoring and guying • Installation of anchor and guy wires			**LO 3. Install pole anchor and guy.** 3.1. Install guy wire on the pole with other hardware based on construction specification 3.2. Install anchor based on the type of construction.	**TLE_IAEPDLC9-12CPIP-Ih-j-IIa-e-11**
• Conductor stringing technique • Performing stringing, tensioning, armoring and tying procedures • Installation of conductor support • Conductor installation requirements			**LO 4. Perform conductor stringing, tensioning, armoring and tying.** 4.1 Prepare conductor with pay-out stand. 4.2 Pull-out conductor from the reel to various electric poles. 4.3 Install conductor on the conductor support based on construction specification. 4.4 Attain the required sag of conductor. 4.5 Apply armoring for protection of conductor. 4.6 Perform tying of conductors to avoid detachment from the insulators.	**TLE_IAEPDLC9-12CPIP-IIf-j-IIIa-c-12**
• Pole ground to neutral ground installation • Rigid and top conductor assembly			**LO 5. Perform line grounding.** 5.1 Install pole ground to neutral condition and guys jumpering are installed in conformity with line construction specification.	**TLE_IAEPDLC9-12CPIP-IIIc-j-13**

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CONTENT	CONTENT STANDARD	PERFORMANCE STANDARD	LEARNING COMPETENCIES	CODE
LESSON 4: INSTALLING DISTRIBUTION LINE EQUIPMENT AND DEVICES (IDLE)				
• Work procedures • Types and classification of lifting devices • Proper use of lifting devices • Installation of line equipment and devices • Types of electrical line equipment and devices • Procedures in installing line equipment and devices	The learner demonstrates an understanding of the concepts and principles in installing distribution line equipment and device.	The learner independently demonstrates installing distribution line equipment and device as well as tapping/connecting line equipment and devices to distribution line based on the training regulation of TESDA.	**LO 1. Install line equipment and devices.** **1.1 Plan and prepare for work.** 1.1 Check/inspect lifting devices. 1.2 Install lifting devices securely to the top of the pole. 1.3 Install line equipment and devices in accordance with construction specifications and standards. 1.4 Select proper size and types of devices to install.	**TLE_IAEPDLC9-12IDLE-IVa-c-14**
• Requirements on line tapping and connection • Safety precautions on line tapping and connection • Installation procedures			**LO 2. Tap connect line equipment and devices to distribution.** 2.1 Install connectors/jumpers between line conductors for safety, conductivity and reliability purposes.	**TLE_IAEPDLC9-12IDLE-IVc-e-15**
• Installing grounding to equipment • Safety precaution of grounding equipment			**LO 3. Install grounding to equipment.** 3.1 Install grounding equipment in accordance with the PEC requirement. 3.2 Install connectors/jumpers between line conductors for safety, conductivity and reliability purposes. 3.3 Perform line tapping/connection in accordance with the construction specification.	**TLE_IAEPDLC9-12IDLE-IVf-h-16**
LESSON 5: INSTALLING CONSUMER SERVICE CONNECTION FACILITY (ICSC)				

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CONTENT	CONTENT STANDARD	PERFORMANCE STANDARD	LEARNING COMPETENCIES	CODE
• Work procedure • Construction of specification manual related to service drop and KWH meter installation • Types and uses of service drop wire/cable and accessories • Types of KWH meter • Safety procedures for installing service drop and KWH meter • Proper size, distances of cable/meter	The learner demonstrates an understanding in installing consumer service connection facility.	The learner independently demonstrates to installing of consumer service connection facility base on the training regulation of TESDA.	**LO 1. Install service drop and kilowatt-hour meter.** 1.1 Plan and prepare for work. 1.2 Install service drop accessories, cables and KWH meter according to Philippines Electrical Code (PEC). 1.3 Install KWH meter according to construction standards and requirements. 1.4 Ensure proper size, distances of cables/meter required by the code. 1.5 Perform proper housekeeping in line with established procedure.	**TLE_IAEPDLC9-12ICSC-IVh-j-17**

INDUSTRIAL ARTS - ELECTRIC POWER DISTRIBUTION LINE CONSTRUCTION NC II

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RESOURCES			METHODOLOGY	ASSESSMENT METHOD
TOOLS	**EQUIPMENT**	**MATERIALS**		
• Ordinary shovel • Spoon shovel, 7 ft • Straight shovel, 7 ft. • Digging/tamping bar, 8', forge steel • Pole pike, assorted size • Pole Jenny (salagunting), 14 ft. • Pole Jenny (salagunting), 18 ft. • Butting board (1"x6"x7" wood or steel) • Cant hook, 4", wooden handle • Bolt cutter, 24" & 36", steel handle • Auger bit, ¾" & 5/8"· • Ratchet, ½ ton • Cum-a-long (wire group) • Conductor rack (payout reel) • Transformer gin/hoist • Bull line (3/4"· manila or polypropylene rope) • Hand line (1/2"· rope) • Dead end loop clamp • Hot line clamp for 1/0 ACSR • Impact tool, power actuated • Pruning saw, diff. sizes *(1 per trainee)* • Linemen pliers, 9 inch, insulated handle • Adjustable wrench, 12 inch • Ball peen hammer, 10 lbs;	• Pole climbing equipment • Hole digger • Telescopic ladder • KWH meter, 1∅ 10 (30)A, bottom connection • DX transformer, 10 KVA, (busted) double bushing • Boom truck and a line truck (only during actual line construction) • Block and tackle, single, 5", 3/8" MSL 227 kg. **Personal Protective Equipment (PPE)** • Hard hat • Goggles/eye protector • Working gloves • Maong jacket (long sleeve) • Safety shoes, high cut with 90 degrees heel boots	• Cross arm, wood or steel, 10 ft. or 8 ft. • Pin insulator • Steel pin • Armor rod for # 1/0 AWG, ACSR • # 1/0 AWG, ACSR • Strand of # 1/0 ACSR two (2) meters length • Pole, wood (tanalized), 40 ft., cl 2 • Pole, wood (tanalized), 35 ft., cl 2 • Pole, wood (tanalized), 30 ft., cl 3 • Pole, wood (tanalized), 25 ft., cl 3 • Cross-arm, 8 ft. • Pin insulator • Suspension insulator 6" • Dead end strain clamp, 1/0 ACSR • Pole top pin • Double arming bolt "5/8x22 • Eye nut, oval 5/8" • Single upset bolt 5/8x10" • Double upset bolt 5/8x10" • Pipe spacer 5/8"· • Ordinary brace, 28" • Log screw • Malleable guy attachment • Guy hook • Guy plate	• Modular • Demonstration • Lecture • Discussion • Dual training • Distance learning	• Written examination • Demonstration of practical skills • Direct observation • Interview

RESOURCES			METHODOLOGY	ASSESSMENT METHOD
TOOLS	**EQUIPMENT**	**MATERIALS**		
forge steel • Screw driver, 12", flat • Adjustable wrench, 12", forge steel • Skinning knife, 2 ¼", insulated canvas bag		• Three bolt clamp • Guy grip, 3/8·guy wire • Dead-end strain clamp, 4/0" • Anchor log, 4 ft. • Anchor expanding • Anchor rod 5/8"·, Twin eye • Anchor rod 5/8"·, Single eye • Spool insulator, 1 ¾" • Spool insulator, 3" • Ground rod 5/8x8' • Ground rod clamp • Eye bolt 5/8x10" • Eye bolt 5/8x12" • Dead end loop clamp for 1/0 ACSR • Conductor ACSR, #1/0 • Conductor ACSR, #4/0 • Conductor ACSR, #2 • Guy wire, 3/8"· • Machine bolt, 5/8"x12 • V-brace, 60" span • Machine bolt, ½ x 6" • Ground wire, 3 strand • Staple wire • Washer square, 1 3/16" hole, 2 ¼ x 2 ¼ x 3/16 • Lock nut 5/8" • Lock nut ½" • Square washer 4"x4" • Anchor shackle • Duplex wire, #6 • Service grip, secondary • Insulated copper, #2		

RESOURCES			METHODOLOGY	ASSESSMENT METHOD
TOOLS	**EQUIPMENT**	**MATERIALS**		
		connector • Fuse cut-out with lighting arrester combination • Compression connector, #1/0 - #2 ACSR		

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GLOSSARY

1.	Anchor	-	a device that supports and holds in place conductors when they are terminated at a pole or structure. The anchor is buried and attached to the pole by way of a guy wire to counteract the mechanical forces of these conductors.
2.	Armor	-	an outer metal layer applied to a cable for mechanical protection. Armor is comprised of factory formed wire, designed to be applied to a range of conductor sizes.
3.	Armor rod	-	an outer metal layer applied to a cable for mechanical protection. Armor rods are comprised of factory-formed wires, designed to be applied to a range of conductor sizes.
4.	Baker board	-	a platform used to work above the ground on a wood pole.
5.	Block and tackle	-	an apparatus of pulley blocks and ropes or cables used for hauling and hoisting heavy objects.
6.	Cable	-	a term generally applied to the larger sizes of bare or weatherproofed (covered) and insulated conductors. It is also applied to describe a number of insulated conductors twisted or grouped together.
7.	Cable pulling lubricant	-	a chemical compound used to reduce pulling tension by lubricating a cable when pulled into a duct or conduit.
8.	Climbers	-	hooks for climbing poles that are attached to a lineman's boots.
9.	Cum-a-long	-	a wire grip for holding a conductor or strand under tension.
10.	Conductor	-	1) a wire or combination of wires suitable for carrying an electrical current. Conductors may be insulated or bare. 2) any material that allows electrons to flow through it.
11.	Connector	-	a conductive coupling device used to connect conductors together.
12.	Cross-arm	-	a wooden/steel support attached to a pole that holds wire and insulators.
13.	Cut-out	-	A transformer fuse so named because when the fuse is removed the circuit opens.
14.	Digger-derrick	-	a type of electric utility line truck that digs holes and sets poles.
15.	Distribution system	-	a term used to describe that part of an electric power system that distributes the electricity to consumers from a bulk power location such as a substation. It includes distribution line, line equipment and power substation.
16.	Distribution transformer	-	a line equipment that reduces voltage from the supply lines for direct connection to operate consumer devices.
17.	Distribution voltage	-	a nominal operating voltage below 69 kV.
18.	Double arming bolt	-	a special long bolt used to assemble two cross arms, one on each side of the pole.
19.	Electrical hazard	-	a dangerous condition such that contact or equipment failure can result in electric shock, arc flash burn, thermal burn, or blast.
20.	Electric meter or energy meter	-	is a device that measures the amount of electrical energy consumed by a residence, business, or an electrically-powered device. Electric meters are typically calibrated in billing units, the most common one being the kilowatt hour.
21.	Electrical safety	-	recognizing hazards associated with the use of electrical energy and taking precautions so that hazards do not cause injury or death.
22.	Electrically safe work condition	-	a state in which the conductor or circuit part to be worked on or near has been disconnected from energized parts, locked/tagged in accordance with established standards, tested to ensure the absence of voltage, and grounded if determined necessary.
23.	Grip all stick	-	see shotgun stick.
24.	Groundman	-	a person working at ground level in support of a lineman working above.
25.	Guy	-	a rope, cord, or wire used to steady, guide, or secure something.

26.	Guy-wire or guy-rope	-	is a tensioned cable designed to add stability to structures (frequently ship masts, radio masts, wind turbines, utility poles, and tents). One end of the cable is attached to the structure, and the other is anchored to the ground at a distance from the structure's base. This allows the tension of each guy-wire to offset the others.
27.	Hotstick	-	an insulated stick usually made of fiberglass that is used to work energized overhead conductors and operate electrical equipment that is overhead, underground and pad -mounted.
28.	Insulator	-	a device that is used to electrically isolate a conductor or electrical device from ground or a different electrical potential. Insulators are broadly classified as either pin-type, which supports the conductor above the structure, or suspension type, where the conductor hangs below the structure. Insulators are usually made of wet-process porcelain or toughened glass, with increasing use of glass-reinforced polymer insulators.
29.	Jumper	-	an electrical connection between two points.
30.	Kilowatt	-	1000 watts of real power. Expressed at kW.
31.	Kilowatt hour	-	the use of one thousand watts for one hour.
32.	Line	-	refers to the conductor in an overhead or underground distribution or transmission line.
33.	Line worker	-	a person whose duties include climbing wood poles or steel structures to perform work on electric power distribution line construction.
34.	Personal Protective Equipment (PPE)	-	the term shall include, but is not limited to, devices designed to be worn by workers for eye, face, head, respiratory, hand, arm, body, leg, foot, and fall protection.
35.	Pole pike	-	a device with a sharp metal point in one end that is used to hold utility poles upright while they are being erected.
36.	Right-of-way	-	a strip of land owned by another party on which a utility places poles, wires, substations, and other facilities.
37.	Service drop	-	an electrical line running from a utility pole to a customer's building or other premises. It is the point where electric utilities provide power to their customers.
38.	Service entrance cable	-	The conductors that connect the service conductors (drop or lateral) to the service equipment of the building.
39.	Shotgun stick	-	a specialized hot stick that allows the capture of certain types of clamps and devices in its hook. It is also called a "Grip All" stick.
40.	Stringing	-	the act of installing overhead electrical wire or conductor.
41.	Tag line	-	a rope used to control the position of equipment being lifted. This is not to be confused with the rope used to actually lift the equipment.
42.	Tension	-	the force in pounds of kilograms on a conductor installed overhead. Too much tension on an overhead line can contribute to mechanical failure.

K TO 12 BASIC EDUCATION CURRICULUM
JUNIOR HIGH SCHOOL TECHNOLOGY AND LIVELIHOOD EDUCATION AND SENIOR HIGH SCHOOL TECHNICAL-VOCATIONAL LIVELIHOOD TRACK

INDUSTRIAL ARTS - ELECTRIC POWER DISTRIBUTION LINE CONSTRUCTION NC II

(320 hours)

CODE BOOK LEGEND

Sample: **TLE_IAEPDLC9-12OMPD-Ia-b-1**

LEGEND		SAMPLE	
First Entry	Learning Area and Strand/ Subject or Specialization	Technology and Livelihood Education_ Industrial Arts Electric Power Distribution Line Construction NC II	**TLE_IA EPDLC 9-12**
	Grade Level	9/10/11/12	
Uppercase Letter/s	Domain/ Content/ Component/ Topic	Operating and Maintaining Power Distribution Line Tools and Equipment	**OMPD**
			-
Roman Numeral **Zero if no specific Quarter*	Quarter	First Quarter	**I**
Lower case letter/s **Put a hyphen (-) in between letters to indicate more than a specific week*	Week	Week one to two	**a-b**
			-
Arabic Number	Competency	Plan and prepare for work.	**1**

DOMAIN / COMPONENT	CODE
Operating and Maintaining Power Distribution Line Tools and Equipment	OMPD
Erecting Distribution Line Poles	EDLP
Climbing the Pole and Installing Pole Assembly Conductors	CPIP
Installing Distribution Line Equipment and Devices	IDLE
Installing Consumer Service Connection Facility	ICSC

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.

K TO 12 BASIC EDUCATION CURRICULUM

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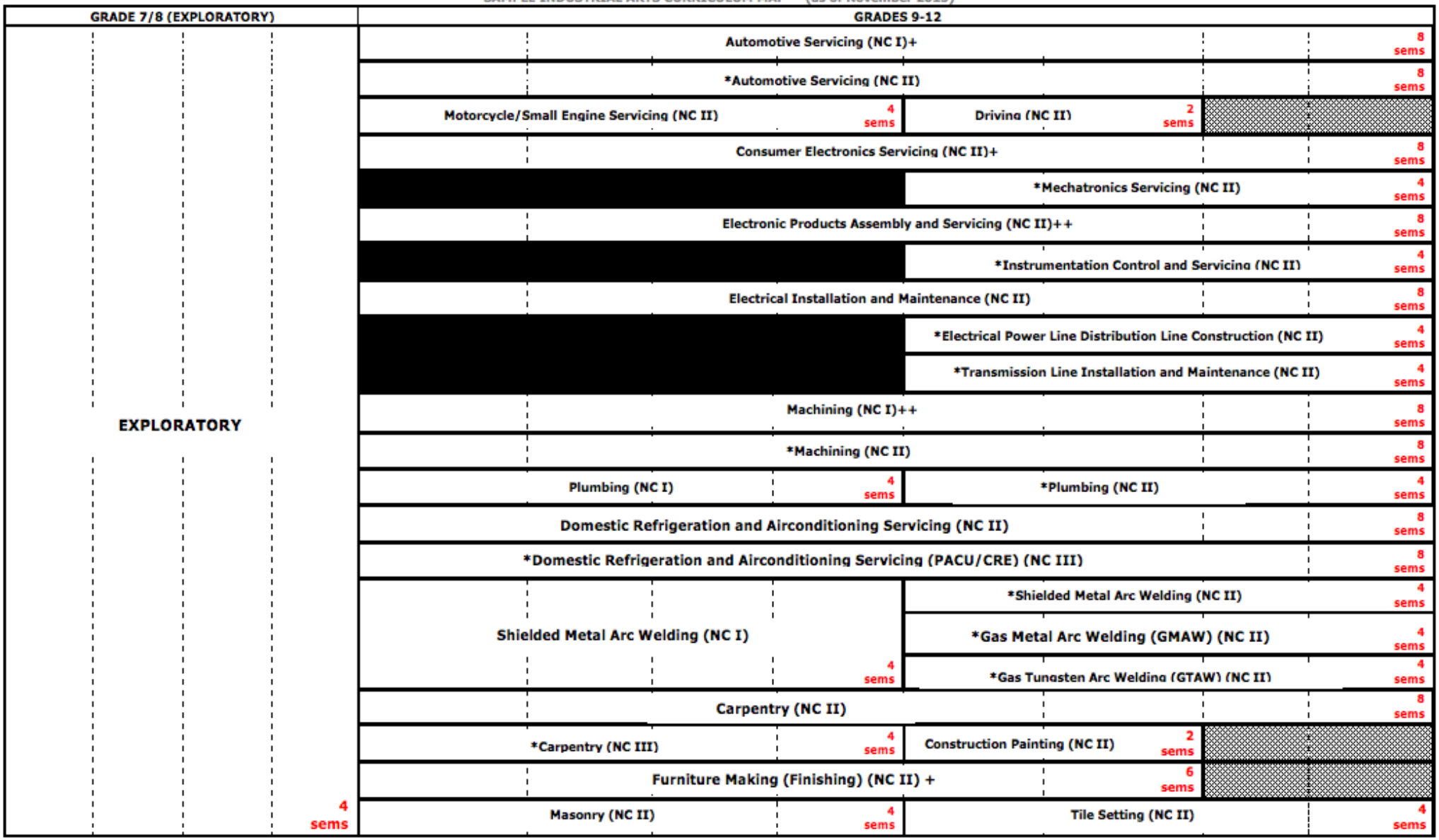
INDUSTRIAL ARTS - ELECTRIC POWER DISTRIBUTION LINE CONSTRUCTION NC II

(320 hours)

SAMPLE INDUSTRIAL ARTS CURRICULUM MAP** (as of November 2015)



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

Other specializations with no pre-requisites may be taken up during these semesters.

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

\+ CG to be updated by December 2015

++ CG to be uploaded by December 2015

****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.**