Republic of the Philippines
DEPARTMENT OF EDCUATION

K to 12 BASIC EDUCATION CURRICULUM

TECHNOLOGY AND LIVELIHOOD EDUCATION

CURRICULUM GUIDE

Exploratory Course on
ELECTRICAL INSTALLATION AND MAINTENANCE

INDUSTRIAL ARTS – ELECTRICAL INSTALLATION AND MAINTENANCE
(Exploratory)
Curriculum Guide for the Exploratory Course on Electrical Installation and Maintenance

For you to get a complete picture of the complete TLE exploratory course on Electrical Installation and Maintenance, you are hereby provided with the Curriculum Guide on Electrical Installation and Maintenance.

Content Standard	Performance Standard	Learning Competencies	Project/ Activities	Assessment	Duration
LESSON 1: PREPARE ELECTRICAL MATERIALS AND TOOLS					
Demonstrate understanding of/on: • Identify supplies, materials and tools applicable to a specific job ➢ Electrical tools and equipment ➢ Electrical supplies and materials • Common splices and joints • Extension cord	1. Tools and materials are identified as per job requirement. 2. Tools are classified according to their function as per job requirements. 3. Materials are classified according to their uses to a specific project. 4. Tools and materials are selected as per job requirement.	LO1. Identify electrical supplies materials and tools	1. Skinning wires using the following tools: a. electricians knife, b. combination pliers &side cutting pliers, c. wire Stripper. Perform operation sheet 1.2A 2. Connecting the skinned wires to the terminals of: a. bulb receptacles, b. switches, and c. fuse boxes. Perform operation sheet 1.2B 3. Perform Splices and joints, 4. Perform operation sheet 1.3A,B, Make an Extension Cord (see project plan)	• Written test • Performance test	12 hours

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Different types of forms • *Requisition Slip* • *Inventory of Materials Form* • *Sample Job order form* • *Equipment Borrower's Form*	1. Needed materials and tools are listed as per job requirement. 2. Materials and tools are requested according to the list prepared. 3. Requests are done as per company standard operating procedures (SOP). 4. Materials and tools are substituted provided required materials and tools are unavailable without sacrificing cost and quality of work.	LO2. Request appropriate electrical supplies materials and tools applicable to a specific job	1. Identify different types of forms use in the shop and explain how it is being used. 2. Simulate student to act as tool keeper and the other is a borrower.	• Direct observation • Written test • Performance test • Direct observation	
• Procedures in receiving and inspecting tools and materials • Proper inspection of tools and materials received.	1. Materials and tools are received and inspected as per quantity and specification based on requisition. 2. Tools and materials are checked for damages and manufacturing defects. 3. Materials and tools received are handled with appropriate safety devices.	LO3. Receive and inspect electrical supplies, materials and tools	Simulation: a. One student act as a supplier and the other as the receiver of supplies	• Direct observation • Written test • Performance test	

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	4. Materials and tools are set aside to appropriate location nearest to the workplace.				
LESSON 2: PERFORM MENSURATIONS AND CALCULATIONS					
Demonstrate understanding of/on: • Measuring tools and Instruments • Proper handling of measuring instruments • Ohms Law	1. Measuring tools are selected/classified as per object to be measured on job requirements. 2. Measurements are obtained according to job requirements. 3. Computation for resistance, current and voltage using Ohms Law are obtained.	LO1.Select electrical measuring tools and instruments.	1. measurement of: a. teachers table, b. the classroom. 1. Measure the ff.: a. Voltage of the outlet, b. Voltage of a dry cell battery, and c. Resistance of resistors.	• Actual demonstration • Direct observation • Written test • Performance test	6 hours
• System of measurement • English • Metric • Converting the unit of measurement from English to Metric and vice versa • The Multi Tester	1. Numerical computations are self-checked and corrected for accuracy. 2. Accurate measurements are obtained according to job requirements. 3. Identified and converted systems of	LO2.Carry out measurements and calculations.	Take the following measurements: • Teacher's Table • Length of Eraser • Height of Cabinet 3. Reading a Voltmeter 4. Reading Ohmeter	• Direct observation • Written test • Performance test	

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• Proper Care and Maintenance • How to read the scale	measurement according to job requirements. 4. Measured work pieces according to job requirements.				
LESSON 3: INTERPRET TECHNICAL DRAWINGS AND PLANS					
Demonstrate understanding of/on: • Common Electrical Symbols • Electrical Signs	1. Electrical symbols and Sign are identified according to job specifications. 2. Electrical symbols and Sign are determined according to classification or as appropriate in drawing.	LO1. Analyze signs, electrical symbols and data.	1. Draw the different signs commonly used in the industry in illustration board or any hard carton board. 2. Identify the different electrical symbols a. Do activity sheet 1.1	• Direct observation • Written test • Performance test	6 hours
• Electrical Wiring Diagram • Pictorial Diagram • Schematic Diagram • Types of Circuit • Series Circuit • Parallel Circuit • Electrical plan • Quantity of Electrical	1. Necessary tools, materials and equipment are identified according to the plan. 2. Components, assemblies or object are recognized as per job requirement. 3. Dimensions and specification are	LO2. Interpret technical drawings and plans.	1. Draw schematic diagrams (electrical plan)	• Direct observation • Written test • Performance	

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Fixture • Draw Schematics Diagram Symbols	identified according to job requirements.				
LESSON 4: MAINTAIN TOOLS AND EQUIPMENT					

Demonstrate understanding of/on:
• Classification of Tools and Equipments
  • Hand tools
  • Machine/Power Tools
• Basic Maintenance of Electrical Tools and Equipment
• Classification of functional and non-functional tools
• Methods of Identfying non-functional tools and equipment
• Classification of Tools and equipment according to their uses
	1. Tools and equipment are identified according to classification/ specification and job .requirements.
	2. Non-functional tools and equipment are segregated and labeled according to classification.
	3. Safety of tools and equipment are observed in accordance with manufacturer's instructions
	4. Conditions of PPE are checked in accordance with manufacturer's instructions.
		LO1. Check condition of tools and equipment.	1. Basic Maintenance of Electrical tools and Equipment
			2. Identify functional and Non-Functional tools and Equipment
				• Direct observation
				• Written test
				• Performance test
					8 hours

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• Definition of Lubricant • Types uses of lubricants • Characteristics of Lubricant • Types and uses of cleaning solvent • 5S Approach in workshop keeping • OSHC workplace regulations • Preventive maintenance techniques and procedures.	1. Lubricants are identified according to types of equipment. 2. Tools and equipment are lubricated according to preventive maintenance schedule or manufacturer's specifications. 3. Measuring instruments are checked and calibrated in accordance with manufacturer's instructions. 4. Tools are cleaned and lubricated according to standard procedures 5. Defective equipment and tools are inspected and replaced according to manufacturer's specification. 6. Work place is cleaned and kept in safe state in line with OSHC regulations.	LO2. Perform basic preventive maintenance.	1. Perform cleaning and lubricating of tools 2. Perform 5's.	• Direct observation • Written test • Performance test	

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• Why maintain Inventory of Tools and Equipment • Maintaining and Storing Hand Tools and Power Tools and Equipment • Sample of Proper Arrangement of Tools and Equipment • Tool safe-keeping/storage	1. Inventory of tools, instruments, and equipment are conducted and recorded as per company practices. 2. Tools are inspected, and replaced if found defective 3. Tools and equipment are stored safely in accordance with manufacturer's specifications or company procedures.	LO3. Store tools and equipment.	1. Preparing inventory of tools and equipment (Operation Sheet 3.1, 3.2)	• Practical exam • Direct observation • Written test	
LESSON 5: PRACTICE OCCUPATIONAL HEALTH AND SAFETY PROCEDURES					
Demonstrate understanding of/on: • Hazards and risks • What is the difference between Hazards and Risks • Five Basic Workplace Hazards • What are examples of Hazard • Threshold limit value (TLV)	1. Workplace hazards and risks are identified and clearly explained. 2. Hazards/risks and their corresponding indicators are identified in with the company procedures. 3. Contingency measures are recognized and established in accordance with organizational	LO1. Identify hazards and risks.	1. Perform Job Sheet • Making an internet research on different company hazards and risks.	• Written test	8hours

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	procedures.				
• What is a Risk Assessment? • Threshold limit value (TLV) • Fire And Explosion Hazard Assessment • Philippine Clean Air Act • Effects of hazards in the workplace • Ergonomics • ECC Regulations	1. Terms of maximum tolerable limits are identified based on threshold limit values (TLV). 2. Effects of hazards are determined. 3. OHS issues and concerns are identified in accordance with workplace requirements and relevant workplace OHS legislation.	LO2. Evaluate hazards and risks.	1. Present a video regarding workplace hazards and risk. 2. Simulation depicting hazards and risks	• Written test • Performance test	

• Hazard Control
  • Identify the Hazard
  • Assess the risk
  • Eliminate Hazard and Risk
  • Engineering Control
  • Administrative Control
  • PPE's
• Your Health and Safety at Work
• Workplace First Aid Facility
• Emergency Preparedness
	1. OHS procedures for controlling hazards and risk are strictly followed.
	2. Procedures in dealing with workplace accidents, fire and emergencies are followed in accordance with the organization's OHS policies.
	3. Personal protective equipment (PPE) is correctly used in accordance with organization's OHS procedures and practices.
		LO3. Control hazards and risks and practice Occupational Health and Safety	1. Do activity sheet 3.1
			  a. Poster making on safety rules and regulations
			  b. Proper waste management exercises
				• Written test	

	4. Procedures in providing appropriate assistance in the event of workplace emergencies are identified in line with the established organizational protocol.				
					40 hours

"By three methods we may learn wisdom: First, by reflection, which is noblest; second, by imitation, which is easiest; and third by experience, which is the bitterest."

- Confucius