INDUSTRIAL ARTS – CONSUMER ELECTRONICS SERVICING
(Exploratory)

Content Standard	Performance Standard	Learning Competencies	Project/ Activities	Assessment	Duration
LESSON 1: USE OF HANDTOOLS					
Demonstrate understanding of/on: • Identifying appropriate hand tools • Selecting appropriate hand tools	1. Appropriate hand tools are identified. 2. Hand tools are selected according to the task requirements.	LO1. Plan and prepare for tasks to be undertaken.	1. Drawing the different tools used in electronic drafting and giving their functions (matrix form). 2. Drawing a project plan of a soldering activity. 3. Practicing soldering using copper wires with specified sizes in diameter and length.	• Written test • Performance test	6 hours
• Operation of hand tools • Function of hand tools • Common faults of hand tools • Safety requirements for handling tools	1. Appropriate hand tools are checked for proper operation and safety. 2. Unsafe or faulty tools are identified. 3. All tools for repair according to standard company procedures are marked.	LO2. Prepare hand tools.		• Performance test	
• Function of tools • Safety requirements of tools • Proper use of tools	1. Tools are used according to tasks undertaken. 2. All safety procedures in using tools are observed at all times. 3. Malfunctions, unplanned or unusual events are reported to the supervisor.	LO3. Use appropriate hand tools and test equipment.		• Performance test	
• Maintenance of tools • Storage of tools • Standard operational	1. Tools are used according to tasks undertaken. 2. Routine maintenance of tools	LO4. Maintain hand tools.	1. Performing preventive maintenance on electronic tools and equipment.	• Performance test	

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procedures, principles, and techniques in maintaining tools	are undertaken according to standard operational procedures, principles and techniques. 3. Tools are stored safely in appropriate locations in accordance with manufacturers specifications or standard operating procedures.		2. Performing functional arrangement of electronic hand tools and equipment in cabinet.		

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LESSON 2: PERFORMING MENSURATION AND CALCULATION					
Demonstrate understanding of/on: • Types of components and objects to be identified • Correct specifications relevant sources • Measuring tools selecting the job requirements • Work instruction • Communication skills	1. Object or component to be measured is identified. 2. Correct specifications are obtained from relevant source. 3. Appropriate measuring instrument is selected in line with job requirement.	LO1.Select measuring instrument.	1. Draw the resistor color coding chart. 2. Identify different resistors based on their color coded value.	• Written test • Performance test	6 hours
• Appropriate measuring instruments to be used • Using accurate measurements for the tasks given. • Using the four fundamental mathematical operations • Introducing proper procedure in calculating fractions, percentages, and mixed numbers • Interpreting work instruction	1. Appropriate measuring instruments are selected to achieve required outcome. 2. Accurate measurements are obtained for job specifications. 3. Calculations needed to complete work tasks are performed using the four fundamental operations (addition, subtractions, multiplication and division) 4. Calculation involving fractions, percentages, and mixed numbers are used to complete workplace tasks. 5. Instruments are read to the limit accuracy of the tool.	. LO2. Carry out measurement and calculation.	1. Measuring resistors value and compare to their color-coded value. 2. Computing for the tolerance values of resistors. 3. Solving problems involving Ohm's Law and Power Law.	• Performace test • Written test • Written test	

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• Using appropriate instruments tools to avoid damage. • Proper procedure in cleaning up the workplace before and after using • Identifying the proper storage of the instruments to be kept that met the manufacturer's specifications and standard to avoid damage in mismatching. • Reading skills required to interpret work instruction	1. Measuring instruments are not dropped to avoid damage. 2. Measuring instruments are cleaned before and after using. 3. Proper storage of instruments is undertaken according to the manufacturer's specifications and standard operating procedures.	LO3. Maintain measuring instrument.	1. Demonstrating proper care and handling tools and instruments in testing electronic components.	• Written test • Performance test	8 hours

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LESSON 3: PREPARING AND INTERPRETING TECHNICAL DRAWING					
Demonstrate understanding of/on: • Drawing conventions • Symbols • Dimensioning conventions • Mark-p/ notation of drawings	1. Correct technical drawing is selected according to job requirements. 2. Technical drawings are segregated in accordance with the types and kinds of drawings.	LO1. Identify different kinds of technical drawings.	1. Drawing the different electronic symbols with their corresponding physical appearance.	• Performance test	8 hours
• Interpreting work instructions • Interpreting electrical/ electronic signs and symbols	1. Components, assemblies or objects are recognized as required. 2. Dimensions of the key features of the objects depicted in the drawing are correctly identified. 3. Symbols used in the drawing are identified and interpreted correctly. 4. Drawing are checked and validated against job requirements or equipment in accordance with standard operating procedures.	LO2. Interpret technical drawing.	1. Drawing the schematic and pictorial diagrams of the following circuits: a. Blinker b. Power supply	• Performance test	
• Tools and equipment for drawing	1. Electrical/ electronic schematic diagrams are drawn and correctly identified. 2. Correct drawing are identified, equipment are selected and	LO3. Prepare/Make changes on electrical/ electronic schematic	1. Converting the unregulated power supply to regulated one.	•Written test • Performance test	

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	used in accordance with job requirements.	diagrams.			

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LESSON 4: APPLYING QUALITY STANDARDS					
Demonstrate understanding of/on: • Interpret work instruction • Workplace standards and specifications • Procedures in obtaining and carrying out work instructions • Quality checking procedures • Fault identification and reporting • Safety and environmental aspects of production process	1. Work instructions are obtained and work is carried out in accordance with standard operating procedures. 2. Received materials are checked against workplace standards and specifications. 3. Faulty materials related to work are identified and isolated. 4. Faults and any identified causes are recorded and/or reported to the supervisor concerned in accordance with workplace procedures. 5. Faulty materials are replaced in accordance with workplace procedures.	LO1. Assess quality of received materials.	1. Mounting electronic components on breadboard following the proper way of connecting components with polarity considerations.	• Performance test	6 hours
• Communication skills needed to interpret and apply defined work procedures • Errors (deviation from customer and or organization requirements)	1. Documentation relative to quality within the company is identified and used. 2. Completed work is checked against workplace standards and specifications. 3. Errors are identified and isolated.	LO2. Assess own work.	1. Identifying the different quality standards to determine errors and sub-standard materials used.	• Written test	

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	4. Information on the quality and other indicators of production procedures are recorded in accordance with workplace procedures. 5. In cases of deviation from specific quality standards, causes are documented and reported in accordance with the workplace standard operating procedures.				
• Relevant production processes, materials and products • Safety and environmental aspects of production processes • Quality improvement processes	1. Process improvement procedures are observed relative to workplace assignment. 2. Work is carried out in accordance with process improvement procedures. 3. Performance of operation or quality of product and service to ensure customer satisfaction is monitored.	LO3. Engage in quality improvement.			

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LESSON 5: OBSERVING OCCUPATIONAL HEALTH AND SAFETY					
Demonstrate understanding of/on: • Health hazards in the work area • Occupational risks • Personal protective equipment Safety nets in the work area	1. Health hazards and occupational risks are identified. 2. Safety nets are formulated and installed. 3. Protective equipment are identified. Occupational health and safety practices are observed.	LO1. Identify health hazards and occupational risks.			6 hours
• Measures advancing occupational health. • Safety practices in electronics laboratory.	1. Measures advancing occupational health are observed. 2. Safety procedures are practiced.	LO2 .Observe occupational health and safety practices.			
					40 hours