INDUSTRIAL TECHNOLOGY

ELECTRICAL TECHNOLOGY
LEVEL 8

Topic	Skills	Knowledge	Understanding	Attitude	Content	Methods/ Strategies	Evaluation	Area of Integration
Use the appropriate Health & Safety materials, tools, equipment gear and accessories.	Practicing tools, materials, equipment, safety and accessories. In teaching safety gear selection of correct tools equipment, machines, materials and safety accessories. Show the correct and economic use of materials. Practice fire drills and use of fire extinguisher accurately.	Identify tools and equipment for safety. State and apply the correct use the tools and safety devices. Wear the safety devices and accessories when operating machines. Use tools and materials economically Practice fire drills. Use of extinguisher.	The correct use of tools, equipment gears and accessories. The need to use safety gears when operating machines. The correct and economic use of tools and materials. The need to practice fire drills and the correct use of fire extinguishers.	Always use the correct tools for the job. Identify equipment, gears and accessories for safe working. Display the correct and economic use of tools and materials. Think of safety to one self and others. Always use a fire extinguisher to put out fires. Practice fire drills.	Types of safety materials, tools, equipment, gear, accessories. Clothing, foot wear and others. Electrical/ Electronic tools/ equipment, ladders, scaffolding, heavy items, flammable and other materials. Types of tools, accessories, procedures and maintenance. Types of extinguishers. Procedures to use extinguisher, maintenance of extinguisher.	Explain the definition of tools, equipment and accessories for a job. Explain the need for safety in any working situation. Identify clothing for body, foot, head and other parts. List types of accessories, procedures and maintenance of safety equipment. Explain and demonstrate the use and Maintenance of fire extinguishers	Ask students to list types of safety equipment, gear and accessories. List protective wear for someone who works with electricity. List types of fire extinguishers and demonstrate their use. Arrange and practice fire drills.	Home Economics Agricultural Science Integrated Science.

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Prepare Accident Reports	Practice types of accidents, injuries and emergencies. Outline rules and regulations for dealing with accidents. How to handle an accidental situation. Plan and prepare an accident report. Demonstrate the preparation of an accident report.	Identify types of accidents. Injuries caused by accidents. Rules and regulations in dealing with accidents. How to treat and accident victim. Planning and preparing an accident report. Prepare an accident report.	Accidents are caused and injuries can be varied. Rules and principles are outlined for dealing with accidents. Procedures and plan of accident report. An accident report must be precise and accurate as possible.	Displaying awareness of the different types of accidents occurring in a workshop. How to treat an accident. Follow regulations and steps in handling an accident case. Preparation of reports and information needed in a report.	Differences between accidents and injuries. Rules and regulations for accidents. Schedules and procedures in dealing with accidents. Backgrounds:- When? Where? Why? How, Who involved? What involved? Results of conclusion and recommendations. Samples of reports.	Explain the differences between accidents and injuries. State rules and regulations for accidents. Outline schedules and procedures in dealing with accident victims. Answer questions pertaining to accuracy of report.	Identify types of accidents and injuries. Describe the procedures in dealing with an accident. Plan and prepare an accident report.	Home Economics Agricultural Science Science Metal Work Wood Work Integrated Science

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Resistors	Demonstrate the use of each type of resistor. Draw a diagram to show the structure of resistors. Connect resistors in series, parallel and series parallel circuits. Calculate total resistance in series circuit, and parallel circuits and a series parallel circuit. Connect rheostats and Potention-meters in circuits.	Define a resistor. List types of resistors State function of resistor. Determine resistor values from colour code. How to connect resistors in series, parallel and series parallel. Calculate total resistance in series, parallel and series parallel circuits.	Identify a resistor. Name the types of resistors. How a resistor functions. To determine resistor values from colour code. How to connect resistors in series, parallel And series parallel. Calculate total resistance in series parallel circuits The use of rheostats and potentionmeters.	Being able to identify resistors from other components. Categorize resistors. Determine resistor values using the colour code. Connect and calculate total resistances in series, parallel circuits. When to use a resistor as a rheostat or as a potention-meter.	Types of resistors carbon, wire-wound, metalize, variable, special types, VDR and LDRS. Resistor colour code. Resistor colour code. Resistors in series parallel and series parallel. Factors affecting resistance. Variable resistors used as a rheostat and as a potentionmeter.	List types of resistors. Identify a fixed resistor and a variable resistor. State the function of resistor in a circuit. Show various types of resistors to students. Draw a diagram to show structure and	Teacher will let students list types of resistors; Identify fixed resistors and variable resistors. Connect and calculate total resistance of resistors connected in series, parallel and series parallel. Determine resistance values using the resistance colour code.	Integrated Science Physics.

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		How to connect a rheostat and potentionmeter in circuits. The factors which affect resistance of materials.	Name factors which affect resistance of materials.	Aware of the factors which resistance of materials.		describe each type of resistor. Let student's copy colour code and explain how to determine the resistance values. Connect resistors in series, parallel and series parallel and calculate total resistances .		Integrated Science Physics.

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Resistance	List factors affecting resistance of materials. Define resistivity of materials. Define temperature coefficient of resistance. Solve problems. Identify materials with zero, positive and negative tenpreature coefficents.	Definition of resistivity of materials. Definition of temperature coefficient of resistance. To solve problems involving resistivity and temperature coefficient of resistance. Knowledge of materials with zero, positive coefficient of resistance.	The definition and units for resistivity. The definition and unit of temperature coefficient of resistance. To calculate resistivity, length, area and resistance of materials. To calculate temperature coefficient of resistance, temperature changes and resistance changes in materials.	State the unit and submultiples of resistance values. Calculate temperature coefficients, temperature changes and resistance of materials. Calculate resistivity, lengths, area and resistances of materials.	Factors affecting resistance, types of materials, CSA, length, temperature. Resistivity Temperature coefficient. Concept of coefficient of resistance/ temperatures, negative temperature and zero temperature coefficients. Temperature coefficient of resistance, resistivity. Units of each quantity.	Explain how to use resistor as potention-meters and as a rheostat. State the factors affecting the resistance of a material – CSA. Length, temperature. Calculate the resistance, area, length and resistivity of materials. Explain, define and state units for temperature coefficient, list material with	Perform calculations involving resistivity. Calculate length, area and resistance. Performance calculations involving resistance, temperature coefficient, temperature changes.	

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					Materials used with positive, negative and zero temperature coefficient. Selection of conductors of electricity.	positive, negative and zero temperature coefficient. Identify materials an good or poor conductors for electricity.		

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Types of Currents	Be able to identify sources of alternating current and direct current. Define the terms cycle, frequency, period, amplitude, RMS values, phase and construct the sine wave. Convert peak values to RMS and Max-values.	Be knowledgeable of AC and D/C sources of generations. Calculating RMS Values, average values, Maximum values, peak-to-peak values, periods, frequency. Convert maximum values to average and RMS values.	The difference in generation of AC and DC voltages and current. The terms used to described AC sine curve. Calculation involving average values, maximum values, RMS values, cycles periods, and frequency. How to convert maximum values to AV. Values and RMS values. To plot a sine curve and label the values.	Identify AC sources and DC sources. Be familiar with the terms associated with AC sine curve. Calculating maximum and minimum values, AV values RMS values, period cycle and frequen cy. Convert maximum values to average values and RMS values, plot sine curves for varying voltages and currents.	Sources of alternating and direct currents. Alternating currents - Cycle - Frequency - Amplitude - Average values - RMS values - Phase - Peak to peak values Direct current. Comparison with AC and DC system of generation.	Teachers and students will discuss AC and DC supplies. Derive definition and units for AC quantities. Perform calculations involving maximum and minimum, peak, amplitude, average and RMS values.	Teachers will evaluate the students by asking them to list sources of generating AD and DC currents. Plot a sine curve for a particular voltage and calculate Maximum value, Minimum value, amplitude, Average value, RMS value, cycle, period and frequency.	Integrated Science.

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Inductance	Being able to define inductance. Connect an inductor in a circuit. Construct simple transformers. Identify common construction and types of transformers. Connect a transformer to step-up or step-down voltages. Describe the effects of inductors in circuits.	The definition of inductance. Connect an inductor in a circuit to construct a simple transformer. To construct several types of transformers. Calculate turns, voltage and current ratios. Effects of inductance in an electric circuit.	The inductance of a coil affects current flow. The construction of a simple transformer. How to calculate the turns, voltage and current ratios of transformers. How a transformer step-up or step-down a voltage. The effects of inductance in circuit.	To define and use the correct unit of inductance. Connect inductors correctly in circuits. Wind a transformer. Calculate the turns, voltage and current rations. Identify in-put and out-put terminals for transformers How to select transformers for an appliance.	Self-inductance. Effect of inductance in a circuit. Energy stored in a magnetic field. Calculating turns voltage and current rations. Choke, coils, mutual inductance. The Henry, Lenz's Law, Inductive circuit Construction of transformers, types of coils, Eddy currents, transformer losses. Uses of transformers.	Teacher will discuss and explain what are inductors, list types of cores. Explain the effects of inductance in a circuit. Determine energy stored in a magnetic field calculate turns rations, voltage ratios and current ratios. Define mutual inductance, state Lenz's Law. Show several types of transformer windings.	Let students list types of transformers cores and inductor coil calculate self-inductance and energy stored in magnetic fields. Explain Lenz's Law and mutual inductance. Calculate turns, voltage and current ratios, primary and secondary turns, currents and voltages.	Integrated Science. Mathematics Integrated Science.

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Capacitance	Be able to define capacitance dielectric strength, energy stored in a capacitor, and the charge in capacitor. How to construct a simple capacitor. List types and construction of capacitors. Connect capacitors in series and parallel. Calculate capacitance in series and parallel.	What is a capacitor? - Dielectric strength - energy stored capacitor. - How to make a simple capacitor. - Connect capacitors in series and parallel. - Calculate total capacitance in series or parallel. Identify capacitor values by colour code.	The function of a capacitor, energy stored in capacitor. The structure of a capacitor. Capacitors connected in series or parallel. How to calculate the total capacitance in series, capacitance in series and parallel. How to determine the capacitor values using the colour code.	Be able to state the function and structure of capacitor. Calculate energy and changes stored , connect and calculate capacitors in parallel. Determine capacitor values using the capacitor colour code. Identify capacitors and their uses.	Definition of capacitance, dielectric strength, energy stored, quantity of charge. Construction of a capacitor, capacitors connected in series and in parallel. Calculate total capacitance in series and parallel. Determine capacitor values using the colour code. Effects of capacitance in circuits.	Give definition of capacitor, unit, dielectric strength and energy stored, -quantity of charge. -Construct a simple capacitor. Perform capacitor calculation. Connect capacitors in various combinations and calculate the total capacitances. Identify colours on capacitors and determine the values	Asks students to construct a simple capacitor. Label and list dielectric materials. Connect and calculate the total capacitance in parallel. Identify colours on capacitors and determine the capacitance. Select capacitors and place them in groups according to	Physics Integrated Science.

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	Determine capacitance using the colour code. Identify types of capacitors.	List the types and application of capacitors.	Name the types of capacitors and their uses.		Types of capacitors and uses. Effect of capacitance in circuits.	using the colour code. List types of capacitors and state their uses.	their types.	