Basic Wiring

Module 5, Task 1	Course of Study Crosswalk:	BW 13

Module	AC Fundamentals
Task / Topic	Identify electrical terms, components and symbols
Content Standard	The student will identify electrical terms, components, and symbols.
Overview/Annotation	
Evaluation	Given a handout of electrical symbols (that includes as a minimum resistors capacitors, fuses, bells, lights, batteries, cells, SPST switch SPDT switch, DPST switch, DPDT switch, rectifier, transformers) and time for practice, the student will draw and correctly identify at least 90% of symbols.
Resources	Handouts Blueprints Wiring diagrams
Lesson Length	

Instructional Method

_____ Lecture	_____ Class Discussion	_____ Team Work	_____ Review
_____ Demonstration	_____ Multimedia	_____ Individual Work	_____ Other

Assessment Strategy

_____ Homework	_____ Written Test	_____ Teacher Observation	_____ Other
_____ Class work	_____ Performance Test	_____ On-Task Ability	_____ Other

Integrated Content Code

x	R		SS		IR		PS		SO		MS	Other	
x	W		M		CL		CT		LD		WA		
x	C	x	S		DM		IM		ES		TW		

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Module 5, Task 1	**Teaching Points *(Procedures/Activities/Learning Experiences)***

1. Discuss different types/terms of symbols.
   a. Schematic
   b. Pictorial
   c. Architectural
   d. Industrial
2. Explain use of symbols.
3. Explain why symbols must be standard and approved.
4. Identify circuit components.
   a. Conductor – control the movement of current in a circuit.
   b. Semiconductor – allow a limited movement of current in a circuit.
   c. Insulator – allow very little movement of current in a circuit.
   d. Transducer – converts one type energy to another type.
   e. Battery – a group of cells connected together.
   f. Cell – a single-unit of a battery that produces DC voltage by converting chemical energy into electrical energy.
   g. Resistor – does not change value regardless of current or voltage flowing through the device.
   h. Thermocouple – devices that convert heat energy into electric energy.
   i. Inductor – a coil of wire wound around a core that stores energy in the form of a magnetic field.
   j. Capacitor – a device consisting of two parallel conductor plates separated by an insulator; stores energy.
   k. Switch – conductors which open or close a circuit.
   l. Fuse – protective device to protect circuits from excessive current or overloads. Opens by melting or blowing.
   m. Circuit Breaker – protective device to protect circuits from excessive current or overloads. Opens by magnetism or bimetallic principle.
   n. Ground Fault Interrupter – a special type of circuit breaker designed to protect people.
5. Explain the identifying characteristics of each component.
6. Define AC electrical terms.
   - Alternating Current – the polarity of the energy source changes periodically.
   - Ammeter – an instrument for measuring electrical current.
   - Ampere – basic unit of electrical current.
   - Amplitude – the peak of a signal.
   - Anode – the terminal by which the electrons exit from a device.
   - Battery – an assembly of cells maintaining a potential difference (voltage) between its terminals.
   - Capacitance – the property of a component to oppose any change in voltage across its terminals, by storing and releasing energy in an internal electric field.
   - Cell – a single-unit of a battery that produces DC voltage by converting chemical energy into electrical energy.
   - Circuit – the path followed by the flowing electrons (current) from the point where they leave the electricity generating facility until they return to it in a closed loop or path.
   - Conductance – the ability of a substance to carry electrical current.
   - Conductor – a substance having many free electrons.
   - Contactor – a switch that is closed or opened by the magnetic pull of an energized relay through the external circuit.
   - Coulomb – a great number of electrons equivalent to 6.25×10^{18} electrons.
   - Current – the rate of flow of electrical charges (electrons).
   - Cycle – a complete reversal of an alternating current, from positive to negative and back to the starting point.

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- Electron – a very small negatively charged particle which can flow from one atom to another in a conducting material.
- Farad – a unit to measure capacitance.
- Frequency – the number of cycles in one second.
- Henry – a unit used to measure inductance.
- Hertz – the unit that measures frequency.
- Inductance - the property of a component to oppose any change in current through itself, by storing and releasing energy in a magnetic field surrounding itself.
- Multimeter – an all-in-one meter. Measures volts, ohms, watts, amps, resistance, etc.
- National Electric Code (NEC) – published minimum standards to encourage effective safe electric wiring procedures, and types of materials.
- Oscilloscope – an electronic device that observes waveforms.
- Peak – maximum or highest amplitude level.
- Period – the time required to complete one full cycle.
- Power – the rate of doing work.
- Programmable controller – an electronic device, using microprocessors, for the control of electrical machinery.
- Resistance – the property of a component to oppose the flow of electrical current through itself.
- Sine wave – a uniform that is generated by a single frequency.
- Transformer – a device that converts voltage and current level.
- Voltage – the difference in potential energy between two electrical points.
- Voltmeter – an instrument for measuring potential differences in volts.
- Watt – the unit of electrical power.
- Waveform – the shape of a wave.

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Module 5, Task 1	**Provision for Individual Differences**

Extension	
Remediation	
Accommodation	
Modification	

Definitions and Suggested Modifications

Attention Deficit Disorder
Autism
Deaf-Blindness
Deafness/Hearing Impairment
Emotional Disturbance
Mild Intellectual Disability
Orthopedic Impairment
Specific Learning Disability
Speech or Language Impairment
Tourette's Syndrome
Traumatic Brain Injury
Visual Impairment