BASIC ELECTRONIC SKILLS

UNIT CODE: IT/CU/ICT/CC/01/5/B

Relationship to Occupational Standards

This unit addresses the unit of competency: Demonstration of basic electronic skills

Duration of Unit:

Unit description

This unit specifies the competencies required to demonstrate basic skills of electronics. It involves identification of electric circuits, electronic components, understand semi-conductor theory, identify and classify memories, apply number systems and identify emerging trends in electronics.

Summary of Learning Outcomes

1. Identify electric circuits
2. Identify Electronic components
3. Understand Semi-conductor theory
4. Identify and classify memory
5. Apply Number Systems
6. Emerging trends in Electronics

Learning outcomes	Content	Suggested Assessment Methods

1. Identify electrical circuits	• Definition of electrical circuit.
	• Basic electrical quantities and their units
	  o E.m.f in volts
	  o Current in Amperes
	  o Power in watts
	  o Energy in joules
	  o Resistance in ohms
	• Types of electrical circuits
	  o Simple A.C circuits
		• Practical exercises
		• Written
		• Observation
		• Oral

Learning outcomes	Content	Suggested Assessment Methods
	○ Simple D.C circuits	
2. Identify Electronic components	• Identification of electronic components ✓ Resistor ✓ Capacitor ✓ Diode ✓ Inductor • Characteristic of electronic components. • Application of electronic components. • Identification of integrated circuit characteristics	• Practical exercises • Written • Observation • Oral
3. Understand Semi-conductor theory	• Definition of semiconductor and related terms ○ Atom ○ Atomic structure • Description of the structure of matter • Explanation of electrons in conductors and semiconductors • Types of semiconductors materials ○ Silicon ○ germanium • Explanation of P-type and N-types materials ○ P-type ○ N-type • Description of P-N junction diodes operations ○ Forward biasing	• Practical exercises • Written • Observation • Oral

Learning outcomes	Content	Suggested Assessment Methods
	○ Reverse biasing • Operations of transistors ○ PNP type ○ NPN type	
4. Identify and classify memory	• Definition of memory • Classification of memories ○ RAM ○ ROM ○ DAM • Types of memories ○ Semiconductor memories ○ Magnetic memories	• Written • Observation • Oral
5. Apply Number Systems and binary coding	• Definition of number system and binary code • Types of number systems ○ Decimal ○ Binary ○ Octal ○ Hexadecimal • Base conversion • Binary arithmetic ○ Addition ○ Subtraction ○ Multiplication ○ Division • Binary codes ○ 8421 BCD	• Written • Observation • Oral

Learning outcomes	Content	Suggested Assessment Methods
	○ Excess-3 • Represent decimal numbers in BCD • BCD arithmetic ○ Addition ○ Subtraction ○ Multiplication ○ Division	
6. Emerging trends in Electronics	• Description of emerging trends • Explanation of challenges of emerging trends • Coping with the emerging trends	• Written • Observation • Oral

Suggested Methods of Delivery

- Presentations and practical demonstrations by trainer;
- Guided learner activities and research to develop underpinning knowledge;
- Supervised activities and projects in a workshop;

The delivery may also be supplemented and enhanced by the following, if the opportunity allows:

- Visiting lecturer/trainer from the ICT sector;
- Industrial visits.

Recommended Resources

Tools

- Screw Drivers
- Pliers
- Wire cutters
- Wire Strippers
- Clamps

- Vises

Equipment

- Voltmeter
- Ohmmeter
- Ammeter
- Multimeter
- Power supplies
- LCR meter

Materials and supplies

- Circuits
- Semiconductor materials
- Conductors e.g., copper, gold, silver
- Insulators e.g., rubber, glass, mica