APPLY BASIC ELECTRONICS
UNIT CODE:IT/CU/ICT/CC/1/6

Relationship to Occupational Standards
This unit addresses the unit of competency: Demonstration of basic electronic skills

Duration of Unit: 100 Hours

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 ✓ E.m.f in volts ✓ Current in Amperes ✓ Power in watts ✓ Energy in joules ✓ Resistance in ohms ❑ Types of electrical circuits ✓ Simple a.c circuits ✓ Simple d.c circuits	• Practical exercises • Written • Observation • Oral
2. Identify Electronic components	❑ Identification of electronic components ✓ Resistor ✓ Capacitor ✓ Diode ✓ Inductor ❑ Characteristic of electronic components. ❑ Application of electronic components.	• Practical exercises • Written • Observation • Oral

		❑ Identification of integrated circuit characteristics	

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
		   ✓ Reverse biasing
		 ❑ Operations of transistors
		   ✓ PNP type
		   ✓ NPN type
			• Practical exercises
			 • Written
			 • Observation
			 • Oral

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
			• Written
			 • Observation
			 • Oral

	❑ Base conversion
	❑ Binary arithmetic
	   ✓ Addition
	   ✓ Subtraction
	   ✓ Multiplication
	   ✓ Division
	❑ Binary codes
	   ✓ 8421 BCD
	   ✓ 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

1. Screw Drivers
   2. Pliers
   3. Wire cutters
   4. Wire Strippers
   5. Clamps
   6. 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