

BASIC ELECTRONIC SKILLS

UNIT CODE:IT/CU/ICT/CC/1/5

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	<ul style="list-style-type: none">• Definition of electrical circuit.• Basic electrical quantities and their units<ul style="list-style-type: none">✓ E.m.f in volts✓ Current in Amperes✓ Power in watts✓ Energy in joules✓ Resistance in ohms• Types of electrical circuits<ul style="list-style-type: none">✓ Simple a.c circuits✓ Simple d.c circuits	<ul style="list-style-type: none">• Practical exercises• Written• Observation• Oral
2. Identify Electronic components	<ul style="list-style-type: none">• Identification of electronic components<ul style="list-style-type: none">✓ Resistor✓ Capacitor✓ Diode	<ul style="list-style-type: none">• Practical exercises• Written• Observation• Oral

	<ul style="list-style-type: none"> ✓ Inductor • Characteristic of electronic components. • Application of electronic components. • Identification of integrated circuit characteristics 	
3. Understand Semi-conductor theory	<ul style="list-style-type: none"> • Definition of semiconductor and related terms <ul style="list-style-type: none"> ✓ Atom ✓ Atomic structure • Description of the structure of matter <ul style="list-style-type: none"> ✓ • Explanation of electrons in conductors and semiconductors • Types of semiconductors materials <ul style="list-style-type: none"> ✓ Silicon ✓ germanium • Explanation of P-type and N-types materials <ul style="list-style-type: none"> ✓ P-type ✓ N-type • Description of P-N junction diodes operations <ul style="list-style-type: none"> ✓ Forward biasing ✓ Reverse biasing • Operations of transistors <ul style="list-style-type: none"> ✓ PNP type ✓ NPN type 	<ul style="list-style-type: none"> • Practical exercises • Written • Observation • Oral
4. Identify and classify memory	<ul style="list-style-type: none"> • Definition of memory • Classification of memories <ul style="list-style-type: none"> ✓ RAM ✓ ROM ✓ DAM • Types of memories <ul style="list-style-type: none"> ✓ Semiconductor memories ✓ Magnetic memories 	<ul style="list-style-type: none"> • Written • Observation • Oral

<p>5. Apply Number Systems and binary coding</p>	<ul style="list-style-type: none"> • Definition of number system and binary code • Types of number systems <ul style="list-style-type: none"> ✓ Decimal ✓ Binary ✓ Octal ✓ Hexadecimal • Base conversion • Binary arithmetic <ul style="list-style-type: none"> ✓ Addition ✓ Subtraction ✓ Multiplication ✓ Division • Binary codes <ul style="list-style-type: none"> ✓ 8421 BCD ✓ Excess-3 • Represent decimal numbers in BCD • BCD arithmetic <ul style="list-style-type: none"> ✓ Addition ✓ Subtraction ✓ Multiplication ✓ Division 	<ul style="list-style-type: none"> • Written • Observation • Oral
<p>6. Emerging trends in Electronics</p>	<ul style="list-style-type: none"> • Description of emerging trends • Explanation of challenges of emerging trends • Coping with the emerging trends 	<ul style="list-style-type: none"> • 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