5.1.0 COURSE FOUNDATIONS AND GENERAL INFORMATION

5.1.01 Introduction

This module unit is intended to equip the trainee with the basic requisites and foundation in Craft in Electrical Engineering and the general information required for understanding the concepts of the trade.

5.1.02 General Objectives

By he end of the module unit, the trainee should be able to:

a) acquire knowledge on occupational and training opportunities available locally and internationally.
b) understanding the meaning and importance of ethics and integrity in the electrical and electronic field.
c) demonstrate ability in material handling and waste disposal.
d) develop the culture of maintenance.
e) acquire knowledge of electrical materials and tools.

5.1.03 Module Unit Summary and Time Allocation

Course Foundations and General Information

Code	Module Units	Sub-Units	Time Hrs
5.1.1	Occupation Information	• Opportunities available • Training institutions • Electrical trade licenses • Role of Kenya Bureau of standards (KEBS)	2
5.1.2	Ethics and Integrity	• Importance of ethics and integrity • How values are acquired, • developed and sustained • Significance of values in society	4
5.1.3	Materials Handling And	• Methods of handling • materials	6

	Waste Disposal	• Methods of disposing waste materials	
5.1.4	Culture of Maintenance	• Culture of maintenance • Need for maintenance • Types of maintenance	4
5.1.5	Electrical Tools	• Tools used in electrical and electronic • engineering • Care and maintenance of tools	8
5.1.6	Electrical Materials	• Classes of electrical materials • Applications of electrical materials	6
5.1.7	Quqlity Control	• Meaning of quality control • Factors contributing to marketability of products • Advantages of good workmanship • Procedure of the work process	6
Total Time			**38**

5.1.1 OCCUPATION INFORMATION

Theory

5.1.1T0 *Specific Objectives*

By the end of the sub-module unit, the trainee should be able to acquire Information on:

a) opportunities available in this career
b) list types of training institutes
c) state types of electrical trade licenses
d) state the role of Kenya Bureau of Standards(KEBS).

Content

5.1.1T1 Opportunities available in this career
- i) Formal
- ii) Informal

5.1.1T2 Training institutions
- i) Universities
- ii) Polytechnics
- iii) Technical training institutions
- iv) Institutes of technology
- v) Youth polytechnics

5.1.1T3 Electrical trade licenses

5.1.1T4 Role of Kenya Bureau of Standards (KEBS)
- i) Setting standards
- ii) Verify standards

Suggested Learning Resources
- i) Board (chalk/white)
- ii) KEBS manual
- iii) Teachers notes
- iv) Visits to other learning institutions

5.1.2 ETHICS AND INTEGRITY

Theory

5.1.2 T0 Specific Objectives

By the end of the sub-module unit, the trainee should be able to:

a) explain ethics and integrity
b) state the importance of ethics
c) describe how values are acquired, developed and sustained
d) explain the significance of values in society.

Content

5.1.2 T1 Stating the importance of ethics and integrity
- Importance of ethics

5.1.2 T2 The meaning of integrity
- Importance of integrity

5.1.2 T3 How values are acquired, developed, and sustained Morality
- Religion and its influence in the society

5.1.2 T4 The significance of values in the society
- i) Individual
- ii) Society

Suggested Learning Resources

i) Text books
ii) Teachers notes
iii) Ethics and integrity act

5.1.3 MATERIAL HANDLING AND WASTE DISPOSAL

Theory

5.1.3T0 *Specific Objectives*

By the end of the sub-module unit, the trainee should be able to:

a) list various methods of handling materials appropriately
b) outline methods of disposing waste materials

Competence

The trainee should have the ability to:

i) Handle electrical and electronics materials safely
ii) Identify appropriate methods of disposing various engineering materials.

Content

5.1.3T1 Methods of handling materials appropriately
i) delicate electronics components
ii) chemicals
iii) radioactive materials
iv) heavy materials

5.1.3T2 Methods of disposing waste materials
i) burning: carbonation using materials (paper)
ii) burying: broken glass, recycling

Practice

5.1.3P0 *Specific Objectives*

By the end of the sub-module unit, the trainee should be able to:

a) identify appropriate methods of handling materials
b) demonstrate ways of disposing waste appropriately.

Content

5.1.3P1 Appropriate methods of handling materials
i) heavy materials
ii) delicate materials

5.1.3P2 Appropriate methods of disposing waste
i) type of materials
ii) consider recycling

5.1.4 CULTURE OF MAINTENANCE

Theory

5.1.4T0 Specific Objectives

By the end of the sub-module unit, the trainee should be able to:

a) explain the meaning of culture of maintenance
b) explain the need for maintenance
c) describe types of maintenance.

Content

5.1.4T1 Culture of maintenance
- i) To embrace
- ii) To practice

5.1.4T2 Need for maintenance
- i) tools
- ii) materials
- iii) equipment
- iv) structure
- v) components
- vi) maintaining health standards
- vii) avoiding deterioration or decay of the Components/materials/tools/equipment

5.1.4T3 Types of maintenance
- i) Routine maintenance
- ii) Preventive maintenance
- iii) Planned maintenance

Suggested Learning Resources
- i) Charts
- ii) Tools
- iii) Equipment

5.1.5 ELECTRICAL TOOLS

Theory

5.1.5T0Specific Objectives

By the end of the sub-module unit, the trainee should be able to:

a) list tools commonly used in Electrical and Electronics Engineering
b) explain care and maintenance of various tools.

Competence

The trainee should have the ability to:
- i) Select the right tools for the right job
- ii) Maintain various tools in the electrical field

Content

5.1.5T1 Tools used in Electrical and Electronic Engineering.

5.1.5T2 Explaining care and maintenance of tools
- i) caring
- ii) cleaning techniques
- iii) Servicing (oiling / greasing)

Practice

5.1.5P0 Specific Objectives

By the end of the sub-module unit, the trainee should be able to:

a) illustrate safe application of tools commonly used in

electrical and electronics engineering
b) perform maintenance of tools in the workshop and other working places.

Content

5.1.5P1 Safe Application Of Tools Used In Electrical Workshop
- i) Cutting tools
- ii) Stripping tools
- iii) Fastening tools
- iv) Fixing tools
- v) Soldering tools
- vi) Holding tools
- vii) Other general purpose tools

5.1.5P2 Maintenance of Tools
- i) Right tool for the right job
- ii) caring
- iii) cleaning techniques
- iv) servicing (oiling/greasing)
- v) storage

Suggested Learning Resources
- i) Various tools in the electrical field
- ii) Tools' cleaning and maintaining aids

5.1.6 ELECTRICAL MATERIALS

Theory

5.1.6T0 Specific Objectives

By the end of the sub-module unit, the trainee should be able to:
a) state different classes of electrical materials
b) state typical applications of electrical materials.

Competence

The trainee should have the ability to:
- i) Identify various classes of electrical materials
- ii) Apply various electrical materials in electrical and electronics works

Content

5.1.6T1 Classes of electrical materials
- i) Conductors
- ii) Copper
- iii) Aluminum
- iv) Silver
- v) Insulators
- vi) PCP
- vii) PVC
- viii) Rubber
- ix) Glass
- x) Asbestos
- xi) Semi- conductors
- xii) germanium
- xiii) Silicon

5.1.6T2 Applications of electrical materials
- i) Conductors - Cables/bus bars
- ii) Insulation- Insulation/sheath

iii) semi conductor - diodes /transistors

Practice

5.1.6P0 Specific Objectives

By the end of the sub-module unit, the trainee should be able to:

a) identify different classes of electrical materials
b) apply different classes of electrical materials in electrical work.

Content

5.1.6P1 Classes of electrical materials

i) Conductors
ii) Copper
iii) Alluminium
iv) silver
v) insulators
vi) mineral
vii) polychloroprene (PCP)
viii) paper
ix) polyvinylchloride(PVC)
x) rubber
xi) glass
xii) asbestos
xiii) semi- conductors
xiv) germanium
xv) silicon

5.1.6P2 Applications of electrical materials

i) Conductors - Cables/bus bars
ii) Insulation- Insulation/sheath
iii) semi conductor - diodes /transistors

Suggested Learning Resources

i) Various electrical materials
ii) Semiconductor materials
iii) Semi conductor components

5.1.7 QUALITY CONTROL

Theory

5.1.7T0 *Specific Objectives*

By the end of the sub module unit, the trainee should be able to:

a) explain the meaning of quality control
b) outline the procedure of the work process
c) enumerate the advantages of good workmanship
d) list factors contributing to marketability of product.

Competence

The trainee should have the ability to:

i) Select good materials to produce a quality product
ii) Select proper tools and equipments to be used to produce a quality product

iii) Determine factors leading to the production of the production of a quality product.
iv) Determine the marketability of a quality product
v) Select a quality product from a given sample

Content

5.1.7T1 Meaning of quality control
5.1.7T2 Procedure of the work process
- sequence of activities
5.1.7T3 Advantages of good workmanship
i) quality products
ii) customer satisfaction
5.1.7T4 Factors contributing to marketability of products
i) durability
ii) finishing
iii) quality of selected materials
iv) intended purpose

Practice

5.1.7P0 *Specific Objectives*
By the end of the sub module unit, the trainee should be able to:
a) control the work process
b) ensure good workmanship
c) produce marketable products.

Content

5.1.7P1 Control the work process sequencing activities
5.1.7P2 Ensure good workmanship
i) quality products
ii) customer satisfaction
5.1.7P3 Produce marketable products
i) durability
ii) finishing
iii) quality of selected materials
iv) serves intended purpose

Suggested Learning Resources
i) Kenya bureau of standards manual
ii) SI standards reference manual
iii) Other stands and code of regulation manuals for the electrical and electronic technology trade