Course: **Certificate in Electrical Installation (Residential)**

Guided Learning Hours: **24 hours**

Pre-requisite: **Basic Mathematics and Science**

Abstract

This unit will provide individuals with the technical and practical knowledge required to carry out basic maintenance of common electrical fixtures and devices found within a residential building.

In order to ensure that the learner fully understand the concepts relating to electrical installation, the course content was structured to maximized the contact hours allocated for practical work. Currently 80% of the course involves hands on, practical training.

Target Audience

This course is ideally suited for anyone who wants to learn the basics of electrical installation and to develop the technical skills required to undertake basic electrical maintenance in their homes.

Learning outcomes

On completion of this course, learners will be able to:

1. Differentiate between the various types and sizes of cables used in residential electrical installations and be able to select the appropriate cable for a particular application.

2. Perform basic practical competencies in electrical installation including stripping of conductors, bending of conduits, installation of trunking, wiring of plugs and outlets.

3. Interpret various wiring schematic diagrams and connect simple lighting and power circuits such as one-way, two –way and intermediate switching circuits, distribution panel with receptacle outlets, photocell controlled lighting circuit.
4. Identify and apply various regulations as it applies to electrical installation and use the multi-tester to perform tests on circuits (polarity, continuity, voltage).

Course Content

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1. Differentiate between various types and size of cables

Cables: Types and size of cables (single core PVC insulated, two core PVC insulated cable with earth-continuity conductors (ecc), three core rubber flex PVC insulated cable, armored cable).

Applications: Conduit wiring for lighting and power circuits; surface mounting of lighting and power circuits; Use of flexible cables; wiring of distribution panels and sub panels.

2. Perform basic practical competencies in Electrical Installation

Practical Competencies: Stripping of various electrical cables using the appropriate tools; bending of conduits (saddle bend, back bend) between 22^{o} to 90^{o} depending on the type of installation; installation of trunking using the appropriate tool; wiring of plugs and power outlets adhering to the appropriate regulations and standards.

3. Interpret various wiring schematic diagrams and connect basic lighting and power circuits

Interpret schematic diagram: Use of electrical symbols; Mapping of power and lighting circuits, Reading of schematic diagrams showing lighting and power circuit layout; connecting components based on schematic diagram layouts.

Applications: Connect components based on schematic diagram layouts (one-way, two-way and intermediate switching circuits; wiring of distribution panel with receptacle outlets, connecting photocell controlled lighting circuits).

4. Perform tests and identify appropriate standards and regulations

Regulations: Identify and apply the relevant regulations and standards from the Bureau of Standards, Trinidad and Tobago Electricity Commission (TTEC) and the Institute of Electrical and Electronics Engineers (IEEE) as it applies to the installation of power and lighting circuits

Testing: Utilize the multi-meter to perform basic tests on various electrical circuits (polarity, continuity and voltage).

Assessment Criteria

In order to achieve Learning Outcome…	The Learner must…
1 Differentiate between various types and size of cables	1.1 Identify the various types and sizes of electrical cables generally used in electrical installation power and lighting circuits. 1.2 Select the appropriate types and size of electrical cables used for various applications in residential electrical installation power and lighting circuits.
2 Perform basic practical competencies.	2.1 Be able to strip various electrical cables using the appropriate tools. 2.2 Be able to bend conduits between 22^{o} and 90^{o} 2.3 Be able to installation trunking using the appropriate tools for various applications. 2.4 Connect various plugs and power outlets adhering to the appropriate regulations and standards (110V / 220V).

3	Interpret and install basic lighting and power circuits.	3.1 3.2 3.3 3.4 3.5	Interpret schematics diagrams which include simple lighting and power circuits. Identify and apply the relevant regulations and standards with regards to electrical installation of simple lighting and power circuits. Connect various circuits: one-way lighting; two-way and intermediate lighting; distribution panel with receptacle outlets; photocell controlled lighting circuit and ground fault interrupters. Adhere to the safety rules when working with electrical systems. Be able to remove and install circuit breakers on a live panel.
4	Perform tests and identify appropriate standards and regulations	4.1 4.2 	Interpret and apply the appropriate standards and regulations as it applies to power and lighting circuits. Be able to use of the multi-meter to perform basic tests on various electrical circuits such as polarity, continuity and voltage.

Essential Learning Resources:

Learners will need access to a range of various websites relating to electrical installation. These may include: publications, data sheets and supporting videos. These additional resources would be directed during the delivery of this course.

Textbooks and Manuals

1. Electrical Installation work (T.G Francis)
2. Electrical Installation theory and practice (E.L Donnelly)
3. T & TEC Power and Lighting