



*Faculty of Engineering  
& Built Environment*

## EXECUTIVE CERTIFICATE IN ELECTRICAL TECHNICIAN

**SIGN UP &  
RECEIVE**

- Starter Pack (T-shirt, ID & Lanyard)
- Orientation Session
- Training & Certificate
- Accommodation at MAHSA University
- Apprenticeship



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**MAHSA UNIVERSITY**

Jln SP 2, Bandar Saujana Putra, 42610 Jenjarom,  
Selangor, Malaysia.

## MODULE 1: Electrical and Electronic Engineering Principles (Week 1-3)

**Overview** This module has been designed to incorporate fundamental concepts and principles of Electric field, Magnetic field, Ohm's and Kirchhoff's laws, Semiconductor fundamentals and basic digital combinational circuits.

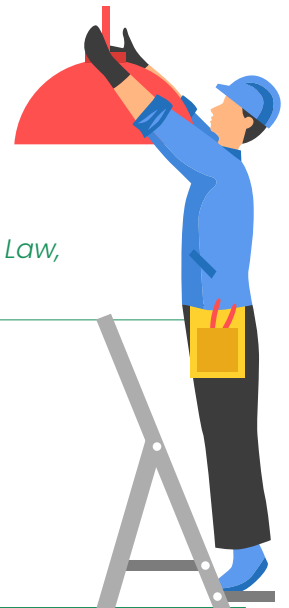
**Objective**

1. Solve simple D.C related questions using Kirchhoff's law and Ohm's law
2. Demonstrate knowledge about Electric and Magnetic Fields
3. Demonstrate knowledge about the properties of semiconductors and diodes

**Topic Outline**

**Topic 1: Electrical Quantities**  
**Topic 2: Electrical Circuits**  
**Topic 3: Introduction to Electric field**  
**Topic 4: Introduction to Magnetic field**  
**Topic 5: Semiconductors fundamentals**  
**Topic 6: PN Junction Diodes**  
**Topic 7: Zener Diode**

*Practical including resistor colour codes, Ohm's Law, Kirchhoff Law, diodes testing at Analog Digital lab*



## MODULE 2: Instrumentation and Measurements (Week 4-6)

**Overview** This module aims to provide students the opportunity to learn and use various types instruments used for engineering measurements. The gained knowledge will be based upon the principles and concepts of electrical measurement theory and practice. The main objective is to provide an understanding of measurement capabilities and limitations. Topics covered will include analogue and digital instrumentation, signal conditioning, sensor and transducers.

**Objective**

1. Use various types of instruments for engineering measurements and applications
2. Analyse measurement process for accurate and precise measurement
3. Illustrate the attributes, characteristics, operation and limitations of various measurement devices

**Topic Outline**

**Topic 1: Instrumentation Overview**  
**Topic 2: Instrument Characteristics**  
**Topic 3: Analogue Instruments**  
**Topic 4: Signal generators and Displays**  
**Topic 5: Sensor and Transducers**  
**Topic 6: Displacement Measurement**  
**Topic 7: Measuring bridges**

*Practical including analogue instruments, digital instruments and signal generators at Analog Digital Lab*



### MODULE 3: Electronic Device and Circuit (Week 7-9)

**Overview** This module provides an introduction to diode applications, construction and working principle of BJT, FET, UJT, Op-Amp, differential amplifiers and power amplifiers with an emphasis on applying theory to practical experimentation.

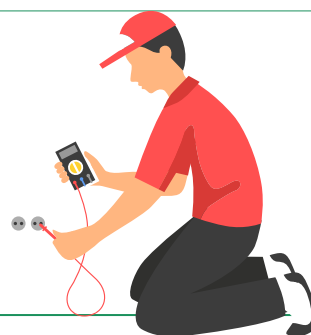
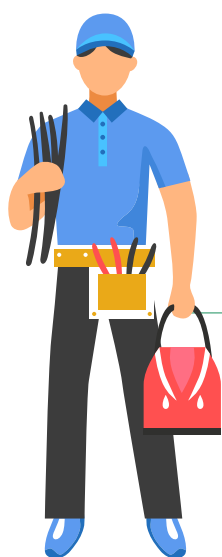
**Objective**

1. Describe the operation of diodes, transistors and op-amps
2. Determine the operation modes and bias conditions of transistors in simple circuits
3. Describe the operation of differential amplifiers, power amplifiers and active filters

**Topic Outline**

**Topic 1: Application of diodes**  
**Topic 2: Bipolar Junction Transistor (BJT)**  
**Topic 3: BJT- DC Biasing**  
**Topic 4: Field Effect Transistor (FET)**  
**Topic 5: FET Biasing**  
**Topic 6: Operational Amplifiers**  
**Topic 7: Differential amplifier**

*Practical including series and parallel diode, half wave and full wave rectifier, bipolar junction transistor circuit, inverting op-amp circuit, non-inverting op-amp circuit*



### MODULE 4: Electrical Machines & Power Systems (Week 10-12)

**Overview** This module consists of an in-depth study of DC machines, three phase circuits, Induction motors and Transformers.

**Objective**

1. Analyse the electrical characteristics, performance and construction of DC machines
2. Analyse the performance of three phase circuits
3. Analyse the electrical characteristics, performance and construction of Induction motors

**Topic Outline**

**Topic 1: DC Generator**  
**Topic 2: DC Motor**  
**Topic 3: AC Circuits**  
**Topic 4: Single Phase Induction Motors**  
**Topic 5: Three Phase Induction Motors**  
**Topic 6: Synchronous machines**  
**Topic 7: Transformers**

*Practical including DC generator, DC motor, induction motor, and transformer at Electrical Machine lab.*

