



SIMPLIFIED ELECTRICAL ENGINEERING FOR TECHNICIANS AND ENGINEERS

📅 July 20-21, 2026 (Monday-Tuesday)
🕒 8.45am – 5.00pm 📍 FMM Institute, Perak



“Simplified Electrical Engineering for Technicians and Engineers” Program provides a Fundamental Understanding of how electricity works in Industrial, Commercial and Domestic Installations. Participants will understand Generation, Transmission & Distribution of Electricity. Participants will also understand on how to use Electrical Test Equipment before putting a Machine to service, participants will be able to calculate Power Factor, Energy Utilization, Cost and Authorities Billing Mechanism. Participants will understand Electrical Safety and Best Practices.

.... COURSE CONTENTS....

MODULE 1 – INTRODUCTION OF ELECTRICAL SYSTEMS

- Understand the Electrical System in Theory.
- What is Electricity
- Suruhanjaya Tenaga – Act & Regulations.
- Transmission, Generation and Distribution.
- Broaden knowledge on In-House Power Distribution Systems.
- Ability to differentiate the different Voltages in a Manufacturing Plant.
- Types of Current
 - AC
 - DC

MODULE 2 – OHM’S LAW, POWER FORMULA AND CALCULATIONS

- Voltage
- Resistance
- Current
- Resistance in Series
- Resistance in Parallel
- Power – kW, HP, kVA

- How to size up an equipment
- Ability to size up cables and Breakers for an Installation.

MODULE 3 – CIRCUIT DESIGN

- Single Phase
- Three Phase
- Industrial, commercial and residential distribution systems.
- Star and Delta Connection.
- Electrical Test Equipment
 - AVO Meter
 - Insulation Megger
 - Earth Megger
 - Clamp Meter
 - How to use Electrical Test equipment

MODULE 4 – ELECTRICAL COMPONENTS

- Transformer types.
- Step Up Transformer
- Step Down Transformer
- Transformer Windings – Primary and Secondary

MODULE 5 – TYPES OF ELECTRICAL FAILURES

- Open Circuit
- Shot Circuit
- Earth Fault
- Causes of Electrical failures
 - Weather
 - Human error
 - Equipment
- Effects of Electrical failures
 - Danger to humans.
 - Loss of equipment.
 - Electrical fires
- Fault Limiting Devices
 - Fuses
 - Circuit Breakers
 - RCCB

MODULE 6 – TEST TO BE PERFORMED

- Understand the various Tests to be performed before an equipment is put into service.
- Insulation Resistance Test.
- Earth Resistance Test.

- Continuity Test.
- Polarity Test.
- DC Pressure Test

MODULE 7 – POWER FACTOR AND ITS EFFECT

- Understanding Power Factor
- How to improve Power Factor in an Installation.
- Effects of Low Power Factor.
- Power Factor penalty charges
- Power Factor calculations.
- TNB Billing Calculations

MODULE 8 – ELECTRICAL SAFETY

- Basic understanding on Electrical Safe Practice and LOTO.
- Understand the hazards of electricity.
- Understand all Electrical Safety signages.
- PPE – Use proper PPE
- Good Electrical practices.
- Quiz

.... OBJECTIVES....

- Understand the Electrical System in an Industry.
- Reduce and eventually eliminated the risk of Electrical related accidents.
- Understand Single Phase and Three Phase Systems and the corresponding Voltages.
- Broaden knowledge on the In-House Power Distribution System.
- Ability to differentiate the different Voltages in a Manufacturing Plant.
- Able to size up Breakers for an Equipment.
- Understand the various Tests to be conducted before an Equipment is put into service.
- Understand TNB Billing System.

.... LEARNING OUTCOMES....

At the end of the Session, Participants will be able to:

- Understand the Theories of Generation, Transmission & Distribution.
- Calculate Voltage, Current & Power.
- Basic Electrical Theories.
- Types and Size of Cables and Current carrying capacity.
- Faults and how to solve the problems.
- Electrical Safety and LOTO.
- Suruhanjaya Tenaga Requirements – Act and Regulations.
- Understand your own Electrical System.

.... WHO SHOULD ATTEND....

Electricians, New Electricians, Maintenance Personnel, Electrical Engineering Personnel, Electrical Design Engineers and others who need to develop skills for accurate and safe electrical troubleshooting and repair.

.... TRAINER....

Ts. BALASUBRAMANIAM A/L SANYASI is an experienced Instructor with more than 40 years' experience in the Industry. He has been working in the Electrical, Facilities & Maintenance field for more than 40 years and has vast knowledge in this area. He holds an Executive Diploma in Facilities and Building Maintenance Management from Universiti Teknologi Malaysia, an Executive Masters in Facilities & Building Maintenance Management from Open University Malaysia and a Diploma in Electrical Engineering from Butterworth Institute of Technology. Ts. Balasubramaniam who is a competent Chargeman, is currently holding "Penjaga Jentera Elektrik Voltan Tinggi" Sekatan BO 33kV registered with Suruhanjaya Tenaga, a registered Asean Engineering Technologist, a Professional Technologist in Electrical & Electronics Technology with Malaysia Board of Technologist and also a Qualified Technician in Building & Construction Technology registered with Malaysia Board of Technologist. He is a registered trainer with PSMB.

Ts. BALASUBRAMANIAM had been a Chargeman AO Trainer since 2000 and a Technical Trainer since 2008 having conducted numerous trainings such as Trouble Shooting Skills, Electrical Maintenance, Preventive Maintenance, Facilities Systems. He is also conducting "Executive Diploma in Facilities & Building Maintenance Management" for University Teknologi Malaysia. He is the Secretary of Technological Association of Malaysia, Penang Branch. He has worked with various Multinationals namely Hitachi Metals Electronics Perai, Advanced Disk Technology/Hoya Electronics Kulim, Johnson Controls Malaysia Sdn. Bhd., Boral Plasterboard (Lafarge) Malaysia Sdn. Bhd., Sony Electronics Perai, Honeywell Aerospace & Avionics Malaysia and Lam Research International.

Closing Date: JUNE 29, 2026

Register in Groups & Enjoy More Savings!

- 2-4 participants: 10% discount
- 5-7 participants: 15% discount
- 8-9 participants: 20% discount

.... COURSE DETAILS....

Date **July 20-21, 2026 (Monday-Tuesday)**
Time **8.45am – 5.00pm**
Venue **FMM Institute Perak**
No 1, Lorong Raja DiHilir, 30350 Ipoh, Perak
Medium of Instruction **English**
CPD **14 hours**
Fees **Members RM1,134.00/pax**
 Non-Members RM1,296.00/pax
(Fees inclusive of Service Tax at 8%, Course Materials, Refreshment, Lunch and Certificate of Attendance)

.... ADMINISTRATIVE DETAILS....

HRD CORP CLAIMABLE COURSE DETAILS

- Training Provider: **FMM Institute Perak** ■ MyCoID : **475427W_PERAK**
- HRD Corp Programme No: **Provided upon confirmation**

DISCLAIMER

The FMM Institute reserves the right to change the facilitator, date and to vary / cancel the course should unavoidable circumstances arise. All efforts will be taken to inform participants of the changes.

REGISTRATION

- Upon **Faxing/Mailing** the completed **Registration Form** to FMM Institute, you are **deemed** to have read and **accepted** the terms and conditions. The **course** would also be **deemed** as **confirmed** unless informed otherwise.
- Will be based on First-Come-First served basis.

PAYMENT

- **Cheques** made in favour of "FMM Institute" should be forwarded to FMM Institute Perak.
- For **HRD Corp Claimable Course**, an **Attendance of 100% is a must**, in any case, **employers will be billed in full**.
- FMM Institute SST Registration No. **W10-1901-32000105**
- FMM Institute TIN No. **C10626805080**

CANCELLATION

Must be in Writing with Reasons ■ 7 days before the course – No payment charged
■ 3 – 6 days before the course - 50% payment charged ■ < 3 days before the course – Full payment charged ■ Participants who did not turn-up will be charged full payment ■ Replacements can be accepted at no additional cost.

~ Registration Form ~

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FMM Institute
No 1, Lorong Raja DiHilir, 30350 Ipoh, Perak

Fax: 05-5488221

Dear Sir / Madam, please register the following participant(s) for the above programme.

1.	Name	Designation	
	NRIC	HP No	
2.	Name	Email	
	NRIC	Designation	
3.	Name	HP No	
	NRIC	Email	

(Please attach a separate list if space is insufficient)

We hereby confirmed that *(Please tick (✓) in appropriate box):-*

- We **will be claiming from HRD Corp** and full payment would made to FMM Institute in the event that no disbursement from HRD Corp under any circumstances
- We **will NOT BE CLAIMING from HRD Corp**. Enclosed cheque/bank draft No _____ for RM _____ being payment for _____ participant(s) made in favour of the "FMM Institute".

Submitted by:

Name:	Designation:	
Company:	Tel:	Fax:
Address:		
Email:	FMM Membership No	

Enquiries – please contact Ms Vaani / Pn Eda / Ms Harvindar ☎ (05) 548 8660 📠 (05) 548 8221 ✉ fmm_institute_perak@fmm.org.my