



**Simple Guide**  
**For**  
**Earthing Systems and Measurements**

Training Programme  
by  
Faculty of Engineering  
Multimedia University

## Overview

This is a course intended to provide comprehensive coverage on the appreciation of the earthing system for safety, lightning protection and the right technique of testing the earth resistance value. Emphasis is placed on understanding the fundamentals, factors affecting earth resistance value and the methods of measurements of earth resistance. The resistance measurements will be discussed briefly, to enlighten and expose the participants to proper field measurement approach, A few samples of on-site measurement data to be discussed, and plotted, to obtain earth resistance value of earthing systems.

This 2-day course provides not only technical knowledge on the importance and factors affecting the performance of earthing systems, but also consists of the right technique of measurements of earth resistance value. A good understanding on the factors affecting earthing systems, which will be followed by step-by-step FoP measurement techniques will be presented. The issues of what constitutes an adequate set of earth resistance measurement data will be addressed.

## Objective

- To understand the concept and purpose of earthing systems.
- To understand the factors affecting the earth resistance value.
- To acquire knowledge on the techniques used on the earth resistance measurements, as suggested in the standards.
- To educate the participants on a systematic approach of earth resistance measurement at field sites.

## Target Audience

- o Electrical engineers and technicians
- o Practicing consultant engineers and contractors in the industry
- o Civil servants, executives, managers and sales personnel dealing with electrical engineering projects
- o Academicians and students
- o Non-electrical engineering personnel responsible for electrical systems in building sites and commercial buildings

## Prerequisite

None.

## Training Methodology

Online.

## Course Duration

2 days (4 hours per day)

## Content/Outline

Basic Concepts

- Importance of Earthing Systems
- Recommended Earth Resistance Value

Factors Affecting Effective Earthing Systems

- Soil Resistivity
  - Types of soil
  - Moisture content
  - Soil temperature
  - Chemical content.
  - Installation of ground enhancement materials
- Earth Electrodes
  - Shape on electrode resistance
  - Selection of a material for an earth electrode
  - Corrosion due to interconnection with other metallic item
- Other Considerations
  - Corrosion and type of soil
  - Maintenance of the grounding system

Touch, Step and Transferred Potentials

Earth Resistance Measurements

- Fall of Potential Method
- FoP Plot

Data Plotting

## Course Instructors

### Assoc. Prof. Ir. Dr Normiza Mohamad Nor

NORMIZA MOHAMAD NOR received her degree in Electrical and Electronic Engineering from University of Wales, College of Cardiff, UK in 1996. She obtained the Ph. D degree in Electrical Engineering from the same university, in 2001.

She has actively involved in the consultancy work and research projects in the areas of earthing systems, high voltage and lightning protections. She has also delivered a number of seminars on the earthing and protection systems in Malaysia. She is now an Associate Professor of Electrical Engineering at the Multimedia University, Malaysia.

### Dr. Nurul Nadia Ahmad

NURUL NADIA AHMAD received B.Eng. degree in Electronic and Communications from University of Bristol, UK, in 1999, and the Ph.D. degree in Electronics and Electrical Engineering (Wireless Communications Group) from University of Southampton, UK, in 2005. Since 1999, she has been with Multimedia University, Malaysia.

Her research interests include signal and image processing, and wireless communications.

## Administrative Details

### Programme Logistics

Duration: 2 days






Dates, registration deadline and registration form:


Please refer to: <https://www.mmu.edu.my/foe/short-courses/>

### Your Investment

	Condition	Price per Pax
Regular Fee	Students / MMU Alumni	RM500
	Public	RM800
	Public (Group >5 pax)	RM600
	IEM/IEEE Members	RM700
Early Bird Fee	Students / MMU Alumni	RM300
	Public	RM600
	Public (Group >5 pax)	N/A
	IEM/IEEE Members	RM500

## Method of Payment

Type of Payment	Method	Details
Local Transaction / Payment within Malaysia	Online Payment with JomPay	<ul style="list-style-type: none"> <li>To get started, login to any preferred internet banking.</li> <li>Look for JomPay to begin the payment process.</li> <li>Enter Ref 1 &amp; Ref 2.</li> </ul> <div style="border: 1px solid black; padding: 5px; margin: 10px 0;">  <b>Billor Code :</b> 22202  <b>Ref-1 :</b> &lt;Participant IC/Passport&gt;  <b>Ref-2 :</b> Event Name*         </div> <p><b>JomPAY</b> online at Internet and Mobile Banking with your Current, Savings or Credit Card account</p> <p><i>*Ref. 2: FOEEarthingSystem</i></p>
		<ul style="list-style-type: none"> <li>To get started, go to <b>MMU website</b> (<a href="https://www.mmu.edu.my/">https://www.mmu.edu.my/</a>) &gt;  <b>Admission &gt; Financial Info &gt; Payment Channel &gt; Non Student</b> ;</li> </ul> <div style="border: 1px solid gray; padding: 5px; margin: 10px 0;"> <p><b>E-Payment</b></p> <p>To begin the payment process, please click Student or Non Students</p> <p>    </p> <p>Student   <b>Non-Student</b></p> </div> <p>or scan the QR code below to begin the process:</p> <div style="text-align: center; margin: 10px 0;">  <p><b>SCAN ME</b></p> </div> <ul style="list-style-type: none"> <li>Choose Category: <b>Public Training</b></li> <li>Workshop Name</li> <li>Choose Your Participant Type:             <ul style="list-style-type: none"> <li>✓ STUDEN (MMU, IEEE, IEM, Other Higher Learning Institution )</li> <li>✓ PUBLIC</li> <li>✓ GROUP ( Group &gt; 5 Pax )</li> <li>✓ IEEE/M (IEEE/IEM Members)</li> </ul> </li> </ul>

Type of Payment	Method	Details
International Payment / Payment outside Malaysia	Online payment with Flywire  	<ul style="list-style-type: none"> <li>To get started, go to <a href="http://mmulanding.flywire.com">mmulanding.flywire.com</a>; or scan the QR code to begin the payment process:</li> </ul> <div style="text-align: center;">  </div> <ul style="list-style-type: none"> <li>Choose Conference for Non-students related</li> </ul>

**Note:**

Please submit the proof of payment to organizer for clearance updating purposes within 2 working days.

**Refund and Cancellation**

Any refunds will be processed in 60 days. Should there be any cancellation, it may be due to the organizer not getting the minimum participants or the participant failing to attend the workshop due to unavoidable reason.

**Disclaimer**

Faculty of Engineering, Multimedia University reserves the right to change the instructors, date and to vary/cancel the programme should unavoidable circumstances arise. All effort will be taken to inform participants of the changes. Upon submission of the registration form, you are deemed to have read and accepted the terms.

**Enquiries**

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