

# Title: ELECTRICAL INSTALLATION AND ENERGY MANAGEMENT

Faculty of  
Engineering  
Short-Courses



## Synopsis

This course is specifically designed for engineers, power managers, contractors and electricians who would like to gain an understanding of the basic principles, theories and understanding of electrical engineering work.



Assoc. Prof.  
Ir. Dr. R. Gobbi



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

## Instructor

(1) Normiza Binti 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 is now an associate professor of electrical engineering at the Multimedia University, Malaysia.

(2) R.Gobbi received the Bachelor degree in electrical engineering from University of Technology, Malaysia, and the Master degree in technology management from the National University of Malaysia, and the Ph.D. degree in the area of torque control of switched reluctance motors from Multimedia University, Malaysia. He has been associated with technical education for more than twenty years. He was an electrician and R&D Engineer before becoming a Lecturer in electrical and electronics engineering.

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**Electrical Installation  
And  
Energy Management**

Training Programme  
by  
Faculty of Engineering  
Multimedia University

## Overview

This course is specifically designed for engineers, power managers, contractors and electricians who would like to gain an understanding of the basic principles, theories and understanding of electrical engineering work. In this course, the participant will learn how to draw the single line diagram of a typical power system, and perform straightforward and common calculations associated with power factor and capacitor sizing. The participants will also gain a good understanding of energy efficiency and conservation guidelines, which are now becoming serious concerns to industries. Problems on motor systems with starters and VSD, and how to address such problems will also be highlighted in this course. Demonstrations and hands-on laboratory experience on utility's systems, induction motors will be included, to experience and observe the real scenario during the operation of these motors and related issues.

## Objective

The course objectives are to:

- appreciate the history of electrical engineering
- provide understanding on the single-line diagram of a typical power system and buildings
- identify the basic protection schemes of a power system
- understand Energy Efficiency and Conservation (EEC) Guidelines

## Target Audience

- Engineering personnel responsible for electrical systems in building sites and commercial buildings, such as mechanical and electrical engineers, structural civil engineers, architects and energy managers.
- Plant engineers, electrical contractors and utility engineers
- Electrical engineering technicians who do not have formal electrical engineering education, civil servants, managers and sales personnel dealing with electrical engineering projects

## Prerequisite

None.

## Training Methodology

Classroom and lab demo.

## Course Duration

2 days.

## Content/Outline

### INTRODUCTION TO POWER SYSTEM

AC and DC sources, Single phase and three phase system, Star and delta three phase system, Power Factor, Energy measurement, Efficiency measurement, Electricity Tariff, Maximum Demand, Electricity Supply Act 1990, Malaysia standard on Energy Efficiency MS1525:2014, New Guidelines for Electrical Wiring in residential Building by Suruhanjaya Tenaga, BS7671:2008, Power Factor Capacitor Sizing, Total harmonic distortion (THD), Measurement THD, Green Building Index

### INSTALLATION SYSTEM FOR ELECTRIC CIRCUITS FOR BUILDINGS

Distribution board (three and single phase), Single Line diagram for electrical installation, Use of Single line diagram for troubleshooting, Sizing of Cable for electrical installation, Concept of Miniature Circuit Breaker (MCB) and Residual Current Circuit Breaker (RCCB), Selection of MCB, RCCB for electrical installation. Earthing System, Energy Efficiency Lighting system, Calculation of Lighting requirement.

### INSTALLATION SYSTEM FOR INDUCTION MOTORS

Concept of Induction motors, High Efficient Motors (IE2, IE3 and IE4), Direct Online (DOL), Start-delta and autotransformer starters, Variable Speed Drives (VSD), Soft Starter. How to size VSD for motor system, how to improve efficiency of motor system. Installation and operation of VSD for energy saving. Problems on motor systems with starters and VSD, How to minimize the problems.

## Course Instructors

### **Assoc. Prof. Dr. Normiza Binti Mohamad Nor**

Normiza Binti 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

### **Ir. Dr. R. Gobbi**

R. Gobbi received the Bachelor degree in electrical engineering from University of Technology, Malaysia, and the Master degree in technology management from the National University of Malaysia, and the Ph.D. degree in the area of torque control of switched reluctance motors from Multimedia University, Malaysia. He has been associated with technical education for more than twenty years. He was an electrician and R&D Engineer before becoming a Lecturer in electrical and electronics engineering. He has supervised many research projects on power electronics, variable-speed drives, automation, and domestic electrical installations. He is a project leader and member of various government research projects related to electric motors and drives systems. He is a consultant providing solutions for many problems associated with electric motors and drives systems for various industries. He has completed many energy auditing projects in industries. He has published more than 70 technical papers in international journals, conferences and magazines. He is an associate professor in the Faculty of Engineering, Multimedia University, Malaysia. His research interests are in reliability of electric motors, power electronics applications in energy industries, switched reluctance motor drives system and solar power application. Dr. Gobbi is a corporate member of the Institution of Engineers Malaysia, a professional engineer with a practicing certificate registered to Board of Engineers, Malaysia, Electric Energy Manager Registered to Energy Commission, Malaysia, and a Senior Member of Institute of Electrical and Electronics Engineers, US.

## Administrative Details

### **Programme Logistics**

Duration: 2 days

Date:

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

Registration deadline:

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

### Your Investment

	Condition	Price per Pax
Regular Fee	IEM Students Members	RM500
	IEM Members	RM700
	Non IEM Members	RM800
Early Bird Fee	IEM Students Members	RM300
	IEM Members	RM500
	Non IEM Members	RM600

### Method of Payment

Please make payment via bank transfer only. Account details is as below:

Account name: Unitele Multimedia Sdn Bhd

Account number: 86-0090180-2

Bank: CIMB Islamic Bank Berhad

Payment must be made by the registration deadline.

### 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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Dr. Katrina D. Dambul: [katrina@mmu.edu.my](mailto:katrina@mmu.edu.my)

## Registration Form

To register, please visit this link: <https://forms.gle/Hm5QnkJR7qeWaceBA>