

# Professional Short Course in Electrical Engineering

Organized by:



ELECTRICAL DIVISION  
電機分部

The Professional Short Course in Electrical Engineering is a series of classes designed to cover different aspects of electrical systems in Hong Kong which are under active development and discussion. They are targeted at engineers, both experienced and young, from different sectors of the electrical industry who seek to refresh or acquire emerging knowledge of the focus topics in electrical engineering. Facilitated by subject experts in practice, the professional short course will benefit the participants by learning through practical design experience sharing and case studies.



## ***The 2017 Course comprises of 4 classes:***

- Class 1 –** Electrical Traction and Overhead Line System
- Class 2 –** Wireless Power Transfer Technology
- Class 3 –** Mission Critical Facility Design
- Class 4 –** Experiences Sharing in Erecting EV Charging Infrastructure in Hong Kong

### **Date**

Class (1) 14 Mar 2017 (2) 16 Mar 2017  
(3) 21 Mar 2017 (4) 23 Mar 2017

### **Time**

7:00 – 9:00pm

### **Venue**

Class 1, 2, 4 Room 1114, Hong Kong Scout Centre  
Class 3 Room 1104, Hong Kong Scout Centre  
Austin Road, Tsim Sha Tsui

### **Fee**

\$450 per class (HKIE member)  
\$550 per class (non-HKIE member)

## **Registration**

Prior registration is required. The class size is limited to 60. Applications will be accepted on a first-come first-served basis. Both HKIE members and non-HKIE members are welcome to enrol in any of the 4 classes.

For registration, please complete the Enrollment Form with a crossed cheque made payable to "The HKIE – Electrical Division", and return to **UG8 Newport Centre, 116 Ma Tau Kok Road, To Kwa Wan, Kowloon (Attn: Ms. Pamela Cheng)**. Successful applicants shall be notified by email.

For enquiries, please contact

Ir Mandy Leung at 9101-0339 or via email: [mmyleung@clp.com.hk](mailto:mmyleung@clp.com.hk)

## **Certificate**

Attendance certificate will be issued for each class.

A short quiz will also be organized at the end of each class to reinforce the knowledge learnt in class. The top 4 outstanding students will be presented with an award at the HKIE-Electrical Division Annual Dinner 2017.

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## Course Outline

### Class 1 Electrical Traction and Overhead Line System

Electrified railway is one of the most energy efficient transportation means in the world. Trains run on the most familiar form of energy – electricity. The distribution system of a railway, however, is quite different from other T&D systems. Therefore it deserves a special name – traction system. The overhead line system of a railway is even fundamentally dissimilar to those purely for power transmission. Train service punctuality is highly dependent on the traction supply reliability. Hong Kong’s renowned rail transport system relies on our engineers in this field.

In this course, you will find out more about the traction and overhead line system in Hong Kong’s railways. The different designs and construction of AC and DC traction systems will be covered. Some particular features of high speed rail will also be briefly introduced.

**Speaker:** Ir Allan FUNG from MTR Corporation Ltd

### Class 2 Wireless Power Transfer Technology

Cutting the annoying power cables, wireless power transfer (WPT) technology based on the magnetic resonance and near-field coupling of resonators has tremendously transformed the way that electrical and electronic devices receive their power. This technology certainly has made our lives more convenient, comfortable, and productive than any generation before us. Over the last 15 years, WPT has appeared as an “emerging” technology that has attracted widespread attention in both academia and industry. As a matter of fact, non-radiative WPT was invented over a century ago by Nicola Tesla. Because of the long history of WPT research and developments, researchers of the modern days often do not know some historical milestones of WPT. This course aims at providing a brief history of some key concepts and technologies that pave the way for modern WPT research and applications. A few misconceptions of WPT technologies are particularly highlighted so that new researchers entering this research field can avoid such pitfalls. Discussions on present and future trends of WPT will also be included.

**Speaker:** Dr. Chi-kwan LEE from The University of Hong Kong

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### Class 3 Mission Critical Facility Design

Reliability of power supply system is important, especially when the power supply system is implemented in a "mission critical facility". This course intends to cover "missioning critical facility" for commercial uses such as data centre and trading activities for investment banker. Its evolution, standard and the expectation from the clients will be discussed. Concept on the "concurrently maintainable" and "fault tolerance" using different transformer, generator and UPS arrangements will be covered. International standard practices including Uptime Institute, Telecommunications Industry Association (TIA) ANSI/TIA-942-A and ASHRAE Technical Committee TC 9.9 will be introduced.

To fully apprehend the overall concept of the "mission critical facility", other essential building services systems will also be discussed such as the process cooling system and IT structured cabling system. This also ensures the electrical engineers appreciate the overall function of these facilities. The attendees will gain practical design knowledge of the "mission critical facility" and appreciate the integration of different systems required in the implementation of it.

**Speaker:** Ir Michael WAYE from Parsons Brinckerhoff

### Class 4 Experiences Sharing in Erecting EV Charging Infrastructure in Hong Kong

Hong Kong has been recognized as a beacon city for the development of electric vehicles (EV). This class will focus on the following areas which will be valuable to those who has planned to erect EV charging infrastructure in Hong Kong:

1. Latest development of EV, charging technologies and their applications
2. Different charging standards and protocols including IEC, SAE and CHAdeMO
3. Design considerations including layout planning, distribution system, metering equipment, equipment selection, load management system, financing scheme etc.
4. Interfacing requirements with local utilities and services provided by HK Electric
5. Case studies

**Speaker:** Ir Peter LEUNG from The Hongkong Electric Co., Ltd.

