



# Thematic Programme : Railway Signalling and Train Control

This programme is jointly designed and presented by MTR Academy and the Hong Kong Section of the Institution of Railway Signal Engineers (IRSE) to share knowledge and expertise with the wider community.

## Language

Cantonese supplemented by English terminology and terms



## Mode of Delivery

Face-to-face



## Venue

MTR Academy - Hung Hom Centre, Kowloon, Hong Kong



## Who Should Attend

- ▶ Executives, project managers and young consulting/ E&M/civil/ systems engineers
- ▶ Practitioners in railway or relevant industry who wish to acquaint themselves with knowledge in the railway signalling
- ▶ Graduate engineers who wish to develop a career in railway industry
- ▶ Potential candidates sitting for IRSE Professional Examination





MTR Academy, a wholly owned subsidiary of MTR Corporation, is geared to become a global training and research hub for upholding world-class performance and creating success.



IRSE Hong Kong Section was established in 1995 to serve the IRSE members residing in Hong Kong and to promote professionalism in railway signalling. The Hong Kong Section now brings together people from all aspects of the rail industry.

## Overview

The topical syllabus starts with the signalling fundamentals before delving at length to a range of essential topics thus offering the programme participant structured insights to the body of knowledge of the unique realm of railway signalling. The programme concludes with a practical sharing of control table design and test knowledge.

## Objectives

### This programme aims to

- Provide a layman introduction of railway signalling principles for engineers of general background
- Open up the learning pathway to reach out to the bulk of knowledge for signalling professionals
- Facilitate extensive understanding of various key elements in practical signalling systems

## Description of Each Module

### Module 1

#### Fundamentals of Railway Signalling and Train Control

- Signalling principles and trackside safety
- Train operation, headway and distance evaluation
- Latest developments in signalling system

### Module 2

#### Railway Signal Control and Communications

(Content is designed with reference to the curriculum in the IRSE Professional Examination)

- Signalling principles and their applications
- Railway infrastructure and signalling equipment
- RAMS and Communications
- Signalling safety design elements - Route Table, Signal Table and Point Table formation



### Module 3

#### Signalling Control Table Design and Test Knowledge

- Route Relay Interlocking (RRI) principles and related relay circuit sequence for route setting
- Relationship between control tables design and signalling circuits on-site implementation
- Solid-State Interlocking (SSI) performing safety functions in Interlocking design with the same integrity of RRI
- Signalling circuit test during implementation stage
- Signalling system control tests (Signal, Route & Point Machine) before a signalling system is put into service





# Schedule



**Delivery:  
In-Person**

No.	 Topic Title	 Speaker	 Date	 Time
Module 1: Fundamentals of Railway Signalling and Train Control				
1	Introduction to the history, principles and function	Mr. YF Sung	13 May 2023(Sat)	9am -12nn
2	Technologies for train detection and communication	Ir. Tai Yin Tung	13 May 2023(Sat)	1:30pm - 4:30pm
3	Signalling Operations	Ir. Tai Yin Tung	27 May 2023(Sat)	9am-12nn
Module 2: Railway Signal Control and Communications				
4	Railway Infrastructure	Mr. YF Sung	3 Jun 2023 (Sat)	9am-12nn
5	Signalling Principles	Mr. YF Sung	10 Jun 2023 (Sat)	9am-12nn
6	Signalling Equipment	Mr. KL Tsang	17 Jun 2023 (Sat)	9am-12nn
7			24 Jun 2023 (Sat)	9am-12nn
8			8 Jul 2023 (Sat)	9am-12nn
9	System Indicators: Reliability, Availability, Maintainability and Safety (RAMS)	Mr. KW Pang	15 Jul 2023 (Sat)	9am -12:45pm
10			22 Jul 2023 (Sat)	9am -12:45pm
11	Communications	Mr. KW Pang	29 Jul 2023 (Sat)	9am -12:45pm
12	Control Table	Mr. Tai Yin Tung	5 Aug 2023 (Sat)	9am-12nn
13			12 Aug 2023 (Sat)	9am-12nn
14	Examination for Module 2	Mr. YF Sung & Ir. Tai Yin Tung	26 Aug 2023 (Sat)	9am-11am
Module 3: Signalling Control Table Design and Test Knowledge				
15	Signalling Control Table Design and Test Knowledge	Ir. Tai Yin Tung	22 Sep 2023 (Fri)	7pm-10pm



# Our Speakers

## Ir Y. T. Tai

MSc, BSc, FIRSE, MHKIE, MIET, CEng, MIEAust, CPE(NER), APEC Engineer IntPE(Aus) Chairman of IRSE (HK)

Timothy Y. T. Tai (Tim) is a professional signal engineer with over 40 years of experience in maintenance, implementation, design; test and commissioning of relay interlocking, Computer Based Interlocking, Automatic Train Control and Communications-based Train Control (CBTC) systems. He is currently currently employed as a consultant for the New ATC Replacement Project for the Urban Lines in HK. Prior to this post, he was the Signalling & Electronic Control Engineering Manager tasked with the responsibility of design, implementation, test & commissioning of modification for the Signalling & Electronic Control system in Operating Railway and the on-coming new line interfacing systems.

Tim was a Visiting Lecturer in the Hong Kong Polytechnic University, teaching Signalling and Train Control Systems in MSc course in year 2009, 2013 and 2019. Tim was also a visiting lecturer for MTR Academy from 2017 to 2022.

---

## Mr. K.W. Pang

FIRSE, Past Chairman of IRSE (HK)

K.W. Pang has over 40 years' experience in the railway industry covering design, maintenance, management, development and multi-discipline large scale projects. His last post in the MTR was the Infrastructure Development & Engineering Asset Manager, who acted as the Asset Owner to coordinate with all infrastructure related Project Teams (including Civil, Power, Track, Signal, Control & Communications) on design, implementation, testing of all new Lines, Extensions and major asset replacements to assure that they comply with the operation, maintenance, safety and recovery requirements at the lowest Life Cycle Cost and minimal impact to existing services.

After MTR, he became the Executive Vice President for the Hong Kong Nicaragua Development Group planning for construction of the Nicaragua Canal. He is the present Vice Chairman of the Institute of Railway Signal Engineers (Hong Kong Section), Senior Consultant for China Railway Construction Corporation Hong Kong Limited, Project Director for contract 1142 of the Guangzhou -Shenzhen-Hong Kong High Speed Rail, and Ex-Senior Consultant for the China Railway Signal & Communications Group.

---

## Mr. Y. F. Sung

FIRSE

Y. F. Sung is a retired professional signal engineer with over 32 years of experience in maintenance, installation, design, T&C of railway signaling system. His last job position was the Signal Maintenance Manager in KCRC, responsible for the first line and second line maintenance of East Rail, West Rail, Ma On Shan Rail and Light Rail.

Mr. Sung was a Visiting Lecturer of VTC, teaching Railway Signalling in the year of 2006, 2008, 2010 and 2014. Mr. Sung was also a visiting lecturer in MTR Academy, teaching Intermediate Railway Signalling course in 2019, 2020 and Basic Railway Signalling course in 2018. He is the General Secretary of IRSE (HK Section).

---

## Mr. K. L. Tsang

K. L. Tsang has over 30 years' experience in the railway industry involved in design, installation, T&C, first line and second line maintenance of S&T works. His last post in the MTR was the S&T Maintenance Manager assigned for the Hangzhou Line1 Project in Hangzhou, China.

K. L. was a competence assessor approved by IRSE to undertake competence assessments for the licensing categories of design, installation, testing and maintenance works.

---





## Intake Scheme and Programme Fees

For details, please [click](#) here to download the Registration Form.

## Programme Enquiry

Please contact Ms. Ng at [slng@mtr.com.hk](mailto:slng@mtr.com.hk) or call +852 2520 3453.



Website: [www.mtracademy.com](http://www.mtracademy.com)

Email: [academy@mtr.com.hk](mailto:academy@mtr.com.hk)

Tel: (852) 2520 3535

Fax: (852) 2520 3570

Hung Hom Centre | Kowloon Bay Depot Centre | Tai Wai Depot Centre | Pat Heung Depot Centre  
MTR Headquarters Building | Citylink Centre | Manhattan Place Centre