

CPD Series:

Railway Signal Control and Communications

Lecture: 2 August – 13 September 2025 (09:00 am - 12:00 pm, 1:30 pm - 4:30 pm) &

Examination: 27 September 2025 (09:00 am – 11:00 am) (Saturdays)

Course Code: SC 25-018

Co-organized with IRSE (Hong Kong Section)

Objectives and Learning Outcomes

Signalling system is very important for safe operation of railway. The course is designed to provide participants with practical understanding of the railway signalling principles; headway calculation for a typical signalling layout, control tables' input and the station communications.

Upon completion of this course, participants will be able to:

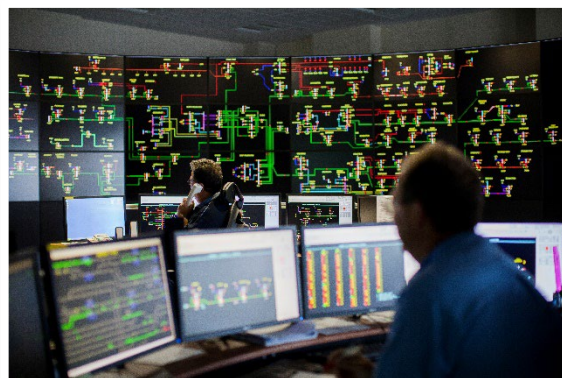
- Evaluate the signalling principles and apply them in practical systems;
- Evaluate headway calculation and understand the railway safety and RAMS; and
- Compile a control table for a given layout according to interlocking requirements.

Who Should Attend

- Practitioners in railway industry who wish to refresh and upgrade their knowledge in the railway signalling and communications areas
- Graduate Engineers who wish to develop a career in railway industry
- Potential candidates sitting for IRSE Professional Examination
- Engineering students who are interested in railway signalling

Language

Lectures will be conducted in Cantonese and supplemented by English terminology and terms. Course materials, including examination, are written in English.



Venue

MTR Academy- Hung Hom Centre

Mode of Learning

Classroom lecture

Course Structure

The programme comprises 6 main parts:

- Signalling principles and their applications
- Railway infrastructure and safety protection
- Signalling trackside equipment and safety design
- Station communications and radio
- RAMS, SPAD, WSF
- Train operation, headway calculation and Control Tables

Professional Speakers



**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 acts 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 leaving MTR, he was 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, Ex-Senior Consultant for the China Railway Signal & Communications Group, present Founder of Leon Rail Solutions etc.



**Mr. Y. T. Tai, FIRSE
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 employed as a consultant for the New ATC Replacement Project for the Urban Lines in HK. Before this post, he is the Signalling & Electronic Control Engineering Manager to in-charge of the section with 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 2025. For the years of 2019 and 2020, he conducted Intermediate Railway Signalling course. He also provided tutorials to the examiners in the UK annual IRSE examination in the past.



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.



Mr. Y. F. Sung, Hon, 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 and Basic Railway Signalling course from 2018 to 2024.

He is the General Secretary of IRSE (HK Section).

Schedule

| Time & Date | Lesson | Topics | Speakers |
|--|----------|--|--------------------------------|
| 2 August 2025 <u>09:00 am – 12:00 pm</u> & <u>1:30 pm - 4:30 pm</u> | 1 | Railway Infrastructure and Safety Protection <ul style="list-style-type: none">i. British Railway Historyii. Rolling Stockiii. High Voltage and Overhead Lineiv. Permanent Way and Worksv. Signalling<ul style="list-style-type: none">—Fouling point and Clearance point | Mr. YF Sung |
| | 2 | Signalling Principles <ul style="list-style-type: none">i. Signalling Standard Principlesii. Signalling Principles for Interlocking Design | Mr. YF Sung |
| 9 August 2025 <u>09:00 am – 12:00 pm</u> & <u>1:30 pm - 4:30 pm</u> 16 August 2025 <u>09:00 am – 12:00 pm</u> | 3, 4 & 5 | Trackside Equipment and Safety Design <ul style="list-style-type: none">i. Point Machinesii. Train Detections, Axle counteriii. Signals and Indicatorsiv. Automatic Warning System (AWS)v. Safety Relays<ul style="list-style-type: none">—Pin codevi. Level-Crossing Equipment<ul style="list-style-type: none">—Half barrier LX—Full Barrier LXvii. Trackside Installation | Mr. KL Tsang |
| 23 August 2025* & 30 August 2025* <u>*09:00 am – 12:30 pm</u> | 6 & 7 | RAMS <ul style="list-style-type: none">i. Description of RAMSii. Fail Safe Conceptiii. Human Errors, SPAD and WSFiv. Train Accidentsv. Accidents and Investigationvi. Rule and regulation | Mr. KW Pang |
| 6 September 2025* <u>*09:00 am – 12:30 pm</u> | 8 | Communications <ul style="list-style-type: none">i. PABX, PAX, SPT, Direct line and Help pointii. CCTV, PA System and PIDSiii. Transmission lines, copper and optical cableiv. Data Network Communicationsv. Train Radio | Mr. KW Pang |
| 13 September 2025 <u>09:00 am – 12:00 pm</u> & <u>1:30 pm - 4:30 pm</u> | 9 & 10 | Control Table <ul style="list-style-type: none">i. Train Operation, Headway Calculation, Block Instrumentii. Single Line Working and Bi-directional Linelii. Organizations and drafting Route Control Table, Point Control Table and Signal Control Tableiv. Control Table exercise and practicev. Case study: past examination questions of control table | Mr. YT Tai |
| 27 September 2025 <u>09:00 am – 11:00 am</u> | 11 | Module Examination | Mr. YF Sung & Mr. YT Tai |

Certificate of Attainment

Signed jointly by MTR Academy and the Hong Kong Section of Institution of Railway Signal Engineers, a Certificate of Attainment will be issued to each participant if he/she passes the final assessment AND satisfies a minimum attendance requirement of 70% in the course.

This training course is recognized for 150 CPD points by the Chartered Institute of Logistics and Transport in Hong Kong (CILT(HK)).

| Programme Fee | Early Bird Fee | Discount Scheme |
|---------------|---|---|
| \$7,900 | \$7,110 (Paid registration on or before 20 July 2025) <small>^Rounded up fee</small> | 15% off for <ul style="list-style-type: none">– members of supporting professional bodies^– full time staff of MTR and its subsidiary companies^– full-time students (Senior Secondary or above) ^ Latest details, please refer to our webpage |

Application Methods

Online

Applicants can enrol and pay online by credit card at <https://www.mtracademy.com>

Enquiry in Person

Address: 1/F, MTR Hung Hom Building, 8 Cheong Wan Road, Hung Hom, Kowloon
Opening hours: Monday – Friday 9am – 8pm; Saturday: 9am – 12:30pm
Closed on Sundays and Public Holidays

Closing Date for Registration

Please note that due to limitations of venue capacity and relevant logistics, all registrations must be made at least 2 working days prior to the delivery date of individual modules. **No walk-in registration will be entertained.**

*MTR Academy reserves the right to turn away successfully enrolled individuals who do not meet prerequisite.