

**THE HONG KONG INSTITUTION OF ENGINEERS
ENGINEERING GRADUATE TRAINING SCHEME “A”**

MODEL TRAINING GUIDE

FIRE ENGINEERING

Model Training Guide (MTG)

The Model Training Guide is a guide to Companies on the practical experiences considered relevant in the formal training of potential Professional Engineers.

Training Programme (TP)

The Training Programme is the plan prepared by a Company which is designed to meet the experiences listed in the MTG and to meet the objectives set out in the Record of Objectives. This ‘plan’ is presented for approval on Form TD1 Part 2 as a part of the Assessment/Reassessment procedures.

Training Period - Nominally 2 years

The length of the training is based on meeting the objectives and not determined by time. The times shown below are indicators only of the time that a trainee would normally take to meet the relevant objectives.

Training Aim

It is important to note that the Scheme “A” Graduate Training is designed to be a fast track by which a graduate can obtain full professional status. The training therefore covers both Technical and Professional matters.

Continuing Professional Development (CPD)

An implicit part of the Scheme “A” training is related to CPD which should be an integral and relevant part of the development of the graduate trainee.

Training Programme Content

(C=Core, D=Desirable)

1. Introduction to the Company and Company Scheme “A” (1 week C)

1.1 Information about the company:

Size, history, subsidiaries, products, services, markets, competitors, management structure, management functions, people communications, locations of facilities and their layout, health & welfare of employees, joint management, staff consultation etc.

- 1.2 Information about training programmes, prospects & career development:

Specialist skills, work of related discipline, management techniques, sources of guidance.

2. Professional & General (1 week C)

- 2.1 HKIE Activities
 - (a) History, role and organisation
 - (b) Development links with HKIE
- 2.2 Professionalism
- 2.3 General Personal Development
- 2.4 Personal Qualities/Demonstrating
- 2.5 Occupational Safety & Health
- 2.6 Environment
- 2.7 Communication
 - (a) Orally
 - (b) Written
- 2.8 Human Resources
- 2.9 Leadership and Management
- 2.10 Appreciation of the role of fire engineers in developing and promoting fire safety in Hong Kong.
- 2.11 Appreciation of international standards commonly used in Hong Kong and local legislations.

3. Fire Engineering Practice, Design and Projects (11.5 months in total)
(The aim of the training is to develop the trainee with good knowledge in multi-disciplines and become competent in one particular discipline.)

- 3.1 Basic Engineering Practice (4 weeks C)

To teach the trainee basic engineering practice appropriate to the employer's activities; knowledge and use of relevant engineering tools together with relevant corporate and legislative environmental and safety requirements.

- 3.2 Fire Services Installation and Equipment Specifications (6 weeks C)

Familiarization with different kinds of fire service installations and equipment; fire suppression appliances and equipment, their design, installation, inspection, testing, commissioning, operation and usage in different occasions. To teach the trainee how installations and equipment function, knowledge of installation and workmanship standards; and skills in identifying sub-standard works; planning and implementation of maintenance programmes for reliability and maintainability; safety and environment considerations; management of fire service systems; emergency and major repairs etc. Installations, equipment or service are defined; what is required, for what purpose, by whom, in what time scale, where and how it is to be used and who is to use it or maintain it; technology survey of what is presently available;

feasibility study, cost, time scale; service life and maintainability considerations; market review, marketability and levels of demand.

3.3 Passive Fire Protection Design (6 weeks C)

To teach the trainee how engineering designs are used to achieve passive fire protection in a building with aids of analytic process/ methods including design and application of principles of building construction as they relate to fire protection, such as construction types, construction materials, interior finish, structural fire resistance, compartmentation, emergency egress and fireman access route design, places of temporary and longer term refuge concept, smoke containment and protection of openings etc.

3.4 Fire Safety Standards and Risk Management (6 weeks C)

In-depth appreciation of definition, requirements and applicability of various local and international fire safety standards, regulations and codes commonly used, applications and verification of compliances with the standards; product testing and quality control, acceptance standards and use of computers; human actions and risk management theories as well as applications.

3.5 Fire Engineering Design (16 weeks C)

To teach the trainee how fire engineering systems function in relation to the intended use of premises, product or service based on prescriptive or performance based approach, including computer aided design; appreciation of research results; drawing practice, reading and preparation of a schematic and working drawings, planning, scaling and layout; theoretical considerations and functioning testing; component specification; worst case analysis and thermal design; preparation of prototypes; reliability and maintainability; safety, health and environmental considerations; standards and regulations.

3.6 Site Engineering Practices (12 weeks C)

Mandatory on site experiences to enhance familiarization, in-depth practical experiences, implementation and site management, and testing and commissioning of the fire services installations and equipment; passive fire protection systems; fire safety and engineering design and risk management.

4. Administration, Management, Technical and Supporting Functions (6 months in total)

4.1 Interpretation, preparation and communication of requirements and specifications and drawings. (minimum 4 weeks C)

4.2 Knowledge on relevant statutory submission procedures, regulations and other organizations relating to fire engineering disciplines. (2 weeks C)

4.3 Tendering procedures, tenders appraisal and contract administration. (D)

4.4 Project work scheduling and management OR management information service. (minimum 10 weeks C)

- 4.5 Communication skills in verbal and written Chinese and English. (D)
- 4.6 Preparation of reports, operation and maintenance manuals etc. (minimum 4 weeks C)
- 4.7 Marketing, sales and contract negotiation techniques. (D)

5. Objective Training (6 months in total)

To allow the trainee to put to use, under supervision, a wide range of the knowledge and experience gained in academic studies and in the course of the activities outlined in Section 1 to 4. He should be given responsibilities and commensurate authority and should render a useful and productive service. Special courses dealing with the particular technologies having a bearing future work may be necessary during training; computer applications should also be included, where appropriate.

N.B.

1. The minimum training period must not be less than 24 months.
2. The programme set out is for guidance only but substantial departure should not be made. Employers should endeavour to provide training to their trainees in as many areas as possible as is appropriate to the sector of employment.
3. This guide should be read in conjunction with Section 3 of the Membership Admission Requirements booklet.
4. During their training, each trainee is required to maintain a Graduate Training Log Book, CPD Logbook and Record of Objectives.