

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

MODEL TRAINING GUIDE

CHEMICAL 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 (1 week in total)
 - 1.1 Information about the company:
 - (a) Size, history, subsidiaries if any
 - (b) Products, markets and competitors
 - (c) Management structure and functions
 - (d) Communication systems
 - (e) Locations and layout of the facilities
 - (f) Safety, health, environmental and welfare
 - (g) Joint consultation arrangements if any

- 1.2 Information about training programmes, prospects & career development:
 - (a) Special skills
 - (b) Work of related discipline
 - (c) Management techniques
 - (d) Sources of guidance

2. Process Safety, Health and Environment (8 months in total)
 - 2.1 Health and safety aspects of process and product, design, installation, operation and management (hazard identification, risk assessment and control, F&IU, OHSO, and other safety, health and environmental related regulations and standards, F&IU safety audit requirements, OHSAS 18000) (minimum 3 months C).

 - 2.1 Environmental management/protection (ISO 14001, environmental aspect identification/evaluation, life cycle assessment, environmental impact assessment, hazardous waste handling and treatment, waste and wastewater treatment, and air and noise pollution control) (minimum 3 months C).

3. Chemical Engineering Practice, Design and Projects (6 months in total)
 At least two of the followings topics:
 - 3.1 Materials selection and analysis (e.g. hazardous substances in material, nano-tech material).
 - 3.2 Process and product evaluation (technical, economic, safety and environmental).
 - 3.3 Process, plant, product and equipment design (chemical/environmental engineering related design which may include mass transfer, energy transfer, momentum transfer, material science, unit operations and other chemical/ environmental engineering topics).
 - 3.4 Process/manufacturing plant operation or management (inclusive of the operation or management of plant or process such as wastewater treatment plant, waste incinerator, air pollution control system).
 - 3.5 Instrumentation or control.

4. Other Aspects of Engineering Practice (4 months in total)
 At least three or more of the following topics:
 - 4.1 Testing, inspection, quality (QC and QA) and TQM
 - 4.2 Research/development projects (process and products)
 - 4.3 Quality assessment of process materials (quality control: sampling, analytical and testing methods)
 - 4.4 Computer applications
 - 4.5 Technical sales, marketing and contract negotiations
 - 4.6 Economics, accountancy and other management services
 - 4.7 Project management
 - 4.8 Engineering ethics
 - 4.9 Environmental Technology

4.10 Other relevant training

5. Objective Training (6 months in total)

This is training in any one or more of the activities outlined Section 2, 3 and 4, which leads to an initial appointment as an engineer. It should also aim to develop skills and knowledge needed to make an effect start. Specialist courses dealing with the particular technologies having a bearing on future work may be necessary during training. Where appropriate, computer applications should also be considered.

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.