

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

MODEL TRAINING GUIDE

ELECTRICAL 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, mission, vision & values, subsidiaries if any
 - (b) Products, markets and competitors
 - (c) Management structure and functions
 - (d) Communication systems
 - (e) Locations and layout of the facilities
 - (f) Quality safety & health, environmental management systems and welfare
 - (g) Joint consultation arrangement if any

1.2 Information about training programmes, prospects & career development:

- (a) Specialist skills
- (b) Work of related disciplines
- (c) Management techniques
- (d) Sources of guidance
- (e) Company policies
- (f) Code of conduct
- (g) Resource and references
- (h) Training and development plan

2. Professional & General (Ongoing)

- 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 (S&H)
- 2.6 Environment/Quality/Safety
- 2.7 Communication
 - (a) Orally
 - (b) Written
- 2.8 Human Resources
- 2.9 Leadership & Management
- 2.10 Own Organisation
- 2.11 Technological Development/Business Operation

3. Electrical Engineering Design, Fundamental & Operational Reliability Applied To Electrical And Associated Systems (12 months in total)

- 3.1 Workshop training (minimum 1 month C)

To teach the trainees on the basic engineering practices in using hand tools and electrical test equipment. To provide basic industrial health and safety trainings and the appropriate use of different types of personal protective equipment. To equip the trainees with basic skills related to electrical engineering which shall include elements such as bench work, various basic skills in machining and metal work, conduit and MCB installation, lighting design, heat ventilation and air conditioning work, different types of control circuits, power cable jointing and termination, LV switchboard testing, computer programming and simulation, CAD/CAE tools practice, PCB fabrication, LAN configuration etc. Emphasis should be given to provide hands-on experiences to the trainees to enable them to appreciate the skills, knowledge and workmanship required for quality product. At least 80% of the above elements should be included in the curriculum of the workshop training.

- 3.2 Design which could include research, investigation or development of electrical plan/electronic components, products and equipment in accordance with requirements and specifications (minimum 2 months C).
 - 3.3 Manufacturing processes of the company or construction or installations (minimum 2 months C).
 - 3.4 Inspection procedure in accordance with standards and specifications or testing or commissioning (minimum 1 month C).
 - 3.5 Operations and operational procedures or maintenance or repairs (minimum 1 month C).
 - 3.6 Project Management including cost management, programme management, quality management and environmental management (minimum 2 months C).
4. Engineering Administration & Management Aspects (6 months total)
- 4.1 Interpretation or preparation of requirements and specifications incorporating sketches and drawings, methods of construction and materials to be used (minimum 1 month C).
 - 4.2 Tendering procedures, tender appraisal and contract administration (D).
 - 4.3 Estimating labour, materials, installation and transport costs and cost control (minimum 1 month C).
 - 4.4 Project scheduling and work management (minimum 1 month C).
 - 4.5 Preparation of reports and manuals for procedures of installation, operation and maintenance, and codes of practice (minimum 1 month C).
 - 4.6 Technical sales and contract negotiation (D).
 - 4.7 Communication skills in verbal and written Chinese and English (D).
 - 4.8 Budgeting system (D).
 - 4.9 General administration knowledge including financial management, human resources study, social awareness, marketing technique etc. (minimum 1 month C).

5. Direct Objective Training (6 months total)

This is training in any one or more of the activities outlined in Section 3 or 4, which leads to an initial appointment as an engineer. It should also aim to develop skills and knowledge needed to make an effective start. Special 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.

Specific project(s) should be assigned to the trainee according to the work nature of the trainee in this period and the emphasis should be on the applications of the essential knowledge and skills acquired in the previous phases of the training programme. The trainee is expected to report the progress at scheduled intervals.

Regular reviews with the trainee should also be arranged together with the supervisor(s) to the trainee so as to ensure the progress to be in line with the project objective(s). The trainee shall be required to submit the final project report before the completion of the training programme so that an overall review on the performance of the trainee may be conducted.

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.