Formal Training Scheme to Associate Membership

Manufacturing & Industrial Engineering

Model Training Guide

1 Model Training Guide (MTG)

The Model Training Guide is, as the name suggests, a guide to Companies on the practical experiences considered relevant in the formal training of potential Technologists.

2 Training Programme (TP)

The Training Programme is the plan prepared by a Company which is designed to meet the experiences listed in the MTG. This 'plan' shall presented for approval (to HKIE) as a part of the Assessment/Reassessment procedures.

The TP must cover the experiences necessary to ensure that Trainees can meet the objectives set out in the **Training Record-of-Objectives**.

3 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 therefore indicators only, the time that a normal trainee would take to meet the relevant objectives. The training period could and often be longer than the nominal training period.

4 Training Aim

It is important to note that the Training Scheme for Associate Members is designed to be the **fast track** by which a graduate can obtain the status of Associate Member of the HKIE.

5 Continuing Professional Development (CPD)

An **implicit part** of the Training Scheme for Associate Members is related to **CPD** which should be an integral and relevant part of the development of the graduate trainee.

6 Training Stages

I Introduction
II Engineering Practice
III Functional Specialist Training
IV Objective Training

7 Training Programme Content

I Introduction (suggest 1 week in total)

1. Information about the company

- **(i)** Size, history, subsidiaries (if any)
- **(ii)** Products and services, markets and competitors
- **(iii)** Management structure and functions
- **(iv)** Communication systems
- **(v)** Location and layout of the facilities
- **(vi)** Safety and health
- **(vii)** Joint Consultation arrangements, (if any)

2. Information about training programme, prospects and career development

- **(i)** Training programme and objectives
- **(ii)** Continuing Professional Development (CPD)
- **(iii)** Obligation, discipline and career development
- **(iv)** Relationship with HKIE, Engineering Supervisor, Tutor

II Engineering Practice (min 8 months in total)

A. Engineering Practice Part I (min 4 months in total)

1. Basic Engineering Practice *(min 1 month)*

Knowledge and use of:

- **(i) Hand/power tools and machine tools, and/or**
- **(ii) Industrial engineering tools to real life or simulated cases**

2. Production Processes or Service Operations [choose either 2.1 or 2.2] *(min 2 months)*

2.1 Production Processes [At least 2 of the following]

- **(i)** Metal forming processes: e.g. rolling, forging, extrusion, drawing, wire drawing, blanking
- **(ii)** Foundry practice or powder metallurgy
- **(iii)** Metal removal processes
- **(iv)** Plastics processing: e.g. injection moulding, blow moulding, vacuum forming, rotational moulding, compression moulding, thermoset casting
- **(v)** Joining of materials: e.g. gas and arc welding, brazing, soldering, ultrasonic welding, adhesive joining
- **(vi)** Heat treatment processes
- **(vii)** Surface treatment; e.g. chemical surface treatment,

enamelling, vacuum metallizing, shot and sand blasting and/or metal spraying

(viii) PCB production: e.g. PCB assembly, SMT processes, TAB bonding

(ix) IC fabrication processes: e.g. wafer sawing, die bonding

(x) Automated/mechanized processes: e.g. applications of pneumatic, electro-mechanical or hydraulic equipment

(xi) Apparel manufacturing processes: e.g. pattern making, pattern grading, sewing

2.2 Service Operations [At least 2 of the following]

(i) Planning and scheduling
(ii) Project management
(iii) Inventory control
(iv) Logistics and support
(v) Costing
(vi) Work study/design

3. Quality, Measurement and Statistical Analysis [At least 1 of the following] *(min 1 month)*

(i) Use of common measuring instruments
(ii) Quality control sampling method
(iii) Data collection and statistical analysis

B. Engineering Practice Part II (min 4 months in total)

4. Associated Technical Activities [choose either 4.1 or 4.2] *(min 3 months)*

4.1 Manufacturing Systems [At least 1 from each Group A & B]

Group A

(i) Design and development of process methods, work specification, workplace layout
(ii) Plant layout and materials handling
(iii) Management information
(iv) Research and development
(v) Product design
(vi) Tooling design
(vii) CAD/CAM systems and applications

Group B

(i) Production planning and control, work scheduling
(ii) Quality control and inspection processes, statistical quality control systems

(iii) Inventory control
(iv) Work study, job evaluation, rate fixing
(v) Testing and commissioning of plant
(vi) Material sourcing

4.2 Service Systems [At least 1 from each Group A & B]

Group A

(i) Business process engineering and design
(ii) Demand forecasting, operational planning and scheduling
(iii) Management Information system
(iv) Services network and logistics design
(v) Plant layout and process flow design
(vi) Project planning and control

Group B

(i) Quality assurance of service systems
(ii) Work study, job evaluation, rate fixing
(iii) Motivation and incentive system
(iv) Testing and commissioning of plant and service
(v) Materials and supplier sourcing
(vi) Reliability, maintenance and service engineering
(vii) EDI, communication

5. Industrial Management and Commercial Activities
[At least 1 of the following] *(min 1 month)*

(i) Organization structure
(ii) Human resources management
(iii) Purchasing
(iv) Dispatch and transportation
(v) Sales/marketing
(vi) Plant engineering/maintenance
(vii) Data processing
(viii) Training

III Functional Specialist Training [choose either (III) 1 or (III) 2]
(min 8 months in total)

1. Manufacturing Industry
This period should be spent in at least **1** or more of the following activities:

(i) Process planning and design e.g. design and development of production processes including tooling up of production lines, plant layout, workplace design

(ii) Tooling design e.g. jig and fixture, metal dies, plastic moulds
(iii) Work study and wage systems
(iv) Quality assurance
(v) Production scheduling and control
(vi) Inventory control
(vii) Maintenance
(viii) CAD/CAM

2. Services Industry

This period should be spent in at least **1** or more of the following activities:

(i) Forecasting and planning
(ii) Operation scheduling
(iii) Operation control
(iv) Work study and wage systems
(v) Inventory control
(vi) Maintenance systems
(vii) Cost control
(viii) Management information systems
(ix) Organisation and management
(x) Office automation

IV Objective Training (min 6 months in total)

This is training in any one or more of the activities outlined in (II) and (III), which leads to an initial appointment as a technologist. 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 be considered at a priority.

N.B.

1. The minimum training period must not be less than 24 months.

2. To meet the requirements of the Institution's Approved Training Scheme for Associate Members, trainees must be under the supervision of an approved Engineering Supervisor and have followed an approval formal training scheme.

3. During their training, each trainee is required to maintain a diary, a CPD Log Book, a Training Log Book and a Training Record of Objectives, and meets with the Engineering Supervisor on a regular basis.