



**SCHEME “A”**

# **ENGINEERING**

## **GRADUATE TRAINING**

### **STUDENT GUIDE**

香港工程師學會  
THE HONG KONG INSTITUTION OF ENGINEERS

# **GRADUATE TRAINING**

This pamphlet is intended to give useful information to persons considering becoming a Professional Engineer, or about to start on their post-graduate stage en-route to becoming a “Professional” Engineer.

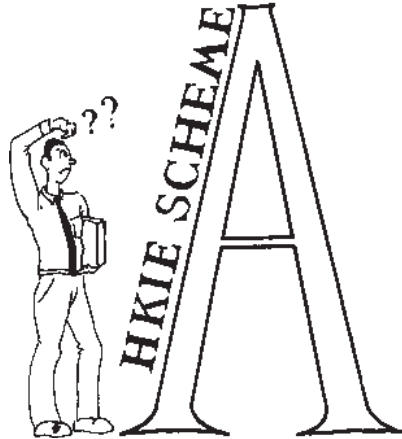
It is meant to be “user friendly” and to help answer the kind of queries that arise. If you have any queries or new questions please call the HKIE Training & Development Section on 2895-4446 or training telephone hotline 2890-6373 or failing that complete the enclosed enquiry form and fax it back to us on 2882-8402.

## **Important Notes:**

The class of Graduate Member of the HKIE now includes persons who have obtained an accredited/recognised higher diploma, higher certificate, associate degree or an acceptable equivalent in a recognised engineering or technological discipline. However, applicants who are eligible to register as Engineering Graduate Training Scheme "A" trainees include only "Graduate Members of the HKIE who also meet the academic requirements for Member in a Discipline."

In this booklet, any reference to the term "graduates", "graduate trainees", "Engineering Graduate Training Scheme "A" trainees", or "Graduate Members" or the like are referring to those "Graduate Members of the HKIE who meet the academic requirements for Member in a Discipline."

# Frequently Asked Questions About The Hong Kong Institution of Engineers (HKIE) Engineering Graduate Training Scheme



**Q1** Before getting down to detail it would help me to know how the training of engineers fits into the overall (HK) social context?

**A** *In order to sustain and allow growth in a modern society it is essential to ensure that there is an adequate supply of well educated and trained young people. This social commitment reflects the growing realisation that 'people' are a most valuable resource. From this springs the critical importance of development (ie education and training) to the full of the human resources available.*

**Q2** What does industry want of a graduate?

**A** *Universally industry ideally wants a graduate who can immediately take up a full profit making post in its organisation!*

*More realistically industry wants graduates who have:- the necessary theory; some related useful skills; a good 'attitude'; the will and desire to 'learn' by experience; the ability to work within a team context and be a productive member of the organisation.*

**Q3 Why is training necessary for a degree graduate?**

**A** *A period of formally structured Training is necessary in order that ‘theory’ is fully integrated with, and reinforced by, ‘practice’; so that graduates are properly and systematically introduced to the ways of industry and set a ‘feel’ for industry in order that they are able to take up a useful ‘productive’ place in industry’.*

*Training is considered of such importance by the HKIE that its successful completion is a mandatory requirement for Corporate Membership.*

*To summarise the need for Engineering Graduate Training. The fresh graduate is in fact not the finished ‘product’ but rather at the stage of having much of the fundamental theory and in need of putting this knowledge into practice with the aim of becoming a competent and confident Professional Engineer.*

**Q4 What is Training?**

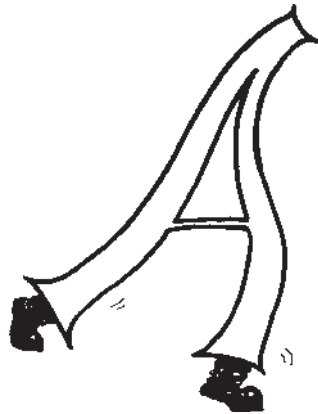
**A** *Training is by definition related to undertaking some activity, usually of a practical ‘hands-on’ nature, in order to acquire a level of ‘skill’ for its effective application. It is a time when knowledge and experience leads to a measure of competence.*

**Q5 What types of ‘skill’ are involved in technologist training?**

**A** *Industrial skills range from the straight craftsman type ‘skill-of-hand’ to the more intellectually based skills such as in the fundamental design skills required by technologists. All types of skill have their place in industry. All are important and as such all are of direct interest to the Professional Engineer who needs an ‘appreciation’ of the former and an ‘acquisition’ of the latter.*

**Q6 What is the difference between acquiring a skill and gaining an appreciation of a skill, process or procedure, etc?**

**A** *This is a good point as getting an **appreciation** of something seen or done implies that an intellectually based understanding has been gained as to the underlying fundamental principles involved; of operational parameters, limitations and advantages of one way of doing something*



over another; and of the skill needed to successfully carry out the operation, process or procedure being studied.

When a '**skill**' is fully **acquired** it implies that one is no longer a 'learner' but is now a competent exponent of the activity!

### **Q7 Why do I need to gain an appreciation of relevant skills?**

**A** To make you a better engineering manager. For instance Professional Engineers in the manufacturing industry need a good understanding of the relevant operator, craft and technician skills as well as a thorough knowledge of the operational parameters of the machines and processes used. This knowledge and experience will enable them to plan in a cost effective manner the production use of the resources, both human and material, that are made available.

You should note that gaining any high level of actual personal skill in any type of 'craft' activity normally involves repetitive actions, narrowly directed, often over many years! Clearly there is no need for a technologist to gain any significant 'hands-on' skill of this type. However it is necessary for a technologist to value persons who have such skills.

### **Q8 How is it intended that an appreciation is gained, where that implies an intellectual, well founded, understanding of what is involved?**

**A** The gaining of an **appreciation** in training is considered best achieved by your being fully involved, mentally and physically, with '**real**' life tasks.

*There is no better way of getting an ‘appreciation’ of these types of activity than by ‘hands-on’ experience where if you let it the intellect will be stimulated by physical involvement. In this way you will learn by your involvement with **real work!***

### **Q9 Why should I be interested in the HKIE training?**

**A** *Basically there are two routes to corporate Membership:-*

- (i) Being registered on the HKIE Engineering Graduate Training **Scheme “A”** which is the theme of this pamphlet. This is the fast route (4 years minimum) from Graduation to Corporate Membership.*
- (ii) The **General Experience** route where this implies relevant work experience and/or unstructured training, considered for acceptance on a ‘case-by-case’ basis. This route (minimum 6 years in all) takes at least 2 years longer to Corporate Membership than via Scheme “A” (minimum 4 years in all).*

### **Q10 How long is the Scheme “A” Training?**

**A** *The Scheme “A” training is nominally required to be of 2 years duration (for most disciplines) or 3 years (for Civil, Structural, Geotechnical and Environmental Engineering trainees), throughout which you should be following an approved training programme. In other words two (or three) years with your undertaking the training activities agreed between the company and the HKIE.*

### **Q11 How do I join Scheme “A” ?**

**A** *To join Scheme “A” you need to be employed by a company already approved for Scheme “A” by the HKIE. The company decide whether to apply to have you registered on Scheme “A” or not. Increasingly however graduates are eager to join an approved company on the understanding that they will be formally registered on Scheme “A” training.*

*It is up to you to carefully consider what is offered by the company and all related matters involved **before** you agree to take up the ‘employment’ on Scheme “A” .*

**Q12 How do I find out which firms are approved for Scheme “A”?**

**A** *Lists of Scheme “A” approved companies can be obtained from the HKIE website.*

**Q13 What part does the Vocational Training Council (VTC) play in Scheme “A”?**

**A** *The VTC works in close co-operation with the HKIE and recognises Scheme “A” trainees for subsidy purposes (over an 18 month period).*

*If accepted for subsidy the VTC will regularly monitor the training being given and the progress of trainees.*

*It is of note that NO government department is eligible for this subsidy and that certain private companies do not apply for it. In these cases trainees will have no contact with the VTC.*

**Q14 Will I get any Certification at the end of the training?**

**A** *The HKIE will issue a Training Certificate at the end of your 2 or 3 years training if successfully completed. This HKIE Training Certificate is an important document for you as it carries with it the endorsement of the HKIE Members that you have reached the expected Professional standards. It is of note that the HKIE Training Certificate is also fully recognised and accepted by overseas Engineering Institutions.*

*If your training place is being subsidised by the VTC they will issue you with a Certificate at the end of 18 months training. This complements, but does not replace, the HKIE Training Certificate.*

**Q15 What are the benefits/advantages in joining Scheme “A”?**

**A** *The benefits of joining Scheme “A” are:*

*For you*

- (a) You have the ‘golden’ opportunity to follow a systematic ‘tailor-made’ graduate level training programme designed to prepare you for your chosen ‘discipline’ in the Engineering Profession. The contents of the Training Programmes are based on international and well*

*accepted models. They are specially structured to give you a broad introduction to your discipline field and for the training experiences, wherever possible, to be based on a multi-disciplinary approach. In this way to broaden your out-look and thus not limit your future career opportunities to a narrow area in your own discipline.*

- (b) Being in industry gives you the chance to look at the company and for the company to look at you with respect to a future career with the company.*
- (c) Your training will be internationally recognised.*
- (d) This formal training route could save you at least 2 years in reaching full Professional Corporate level.*

### **For a Company**

- (a) It is now generally accepted that **human resources** are a company's most **valuable asset**. It makes sense therefore and indeed is essential for companies to groom their own future technical management/ supervisory level staff to ensure sufficient continuity and excellence of effort.*

***“as the tree is trained so it will grow!”***

- (b) If the training is well structured and the graduates properly guided and ‘used’ they can be an important part of the company’s available workforce.*
- (c) Companies have the opportunity to evaluate, for possible later employment purposes, graduates under working conditions.*
- (d) As trainees are in a sense ‘bound’ to the Scheme for two years (or three) then the company is ‘normally’ assured of their continuous presence and efforts for two or three years.*

*This is important to a company as it provides an incentive for ‘**long**’ term planning and continuity of effort. In such a framework trainees undoubtedly can play a very useful and productive part in any organisation particularly during the later stages of the training.*

- (e) Being Scheme “A” approved is an attraction to graduates to work for the company.*



- (f) *Having the HKIE Scheme “A” approval gives international status to the company as to the quality of its operation.*
- (g) *Overseas Investors and Customers need reassurance that local companies are technically well supported and that the company is planning for the future by providing recognised graduate training.*
- (h) *The company can apply to be considered for the VTC trainee subsidy which could significantly supplement the salary they give trainees.*

**Q16 Why does the HKIE undertake the assessment and related administration work associated with the Scheme “A” training?**

**A** *The HKIE is a Professional Engineering institution. As such it has a direct responsibility to its members and to society as well as a moral one to ensure the proper levels of entry and practising standards related to its membership.*

*One entry requirement for full Corporate Membership is that a given period of relevant registered Scheme “A” Training has been successfully undertaken.*

**Q17 What about if I am on Scheme “A” and for some reason I cannot or do not want to finish the Scheme “A” with the company?**

**A** *Registrations during Scheme “A” training are discouraged by the HKIE and change of company is not normally approved unless good reasons exist and with approval from the HKIE.*

*If the change is agreed the requirement is that the new company must be approved for Scheme “A” . Before any re-registration takes place the ‘new’ company will need to show that the training programme it proposes complements your previous completed training in terms of content and that your overall training period remains at that required (2 or 3 years).*

## **Q18 What is the role of an Engineering Supervisor?**

**A** *The overall authority in the company related to your training is the designated **Head of Office**. In practice your ‘training’ will be monitored in an overall way by your designated **ENGINEERING SUPERVISOR** who is in fact the HKIE’s ‘**de-facto**’ representative in the company.*

*It is the Engineering Supervisor’s role to maintain ‘professional’ standards and to see that you follow the agreed training programme and to ‘formally’ assess your performance and in helping you, by encouragement, advice and motivation, to achieve success.*

*In most companies the Engineering Supervisor will normally delegate the day-to-day monitoring and supervision of your training to a designated **TRAINING TUTOR**. In smaller companies the two roles (ES & TT) are rather more blurred but the Engineering Supervisor and the Training Tutor could not be the same person.*

## **Q19 What is the difference between an ‘Internal’ and ‘External’ Engineering Supervisor?**

**A** *An **Internal Engineering Supervisor** is a Professional Engineer who works in the same company with whom you are employed.*

*In certain cases, where no suitable person is available to carry out the duty of a company based Engineering Supervisor, a Professional Engineer **External** to the company can be appointed.*

*In all cases the HKIE interviews proposed Engineering Supervisors, who must be the HKIE Corporate Members and be approved before taking up this role.*

**Q20 What Scheme “A” programme should I follow?**

**A** *The aim of your taking, or being registered to take, Scheme “A” training is to put you on a fast and well planned route to Corporate Membership. Therefore the ‘normal’ Scheme “A” which will allow this is the one in the same discipline (subject area) as your qualifying degree (or equivalent).*

*However **mismatches are considered** and a number of precedents exist for accepting such mismatch registrations. If in doubt ring the HKIE Training & Development Section for guidance on this issue.*

**Q21 What if I am not being properly trained, not following the agreed training programme and/or consider I am being misused or exploited in some way?**

**A** *It is the ‘duty’ of the Engineering Supervisor to take whatever action is required to ensure that you do follow the agreed training programme and that you are properly deployed in order to gain the necessary experiences. If this is not happening then it is **up to you** to make sure that your Engineering Supervisor and Head of Office know of the situation. In such cases the Head of Office will no doubt take the necessary corrective action. If no one in the company responds to your situation then you should consider contacting the HKIE preferable via your Engineering Supervisor.*

**Q22 Is Continuing Professional Development (CPD) encouraged by the HKIE in Scheme “A” training?**

**A** *Most certainly ‘yes’ as the need to continually update knowledge and skills to match technological developments is increasingly necessary throughout a Professional Engineer’s Working life. It is considered by the HKIE essential that graduate trainees update their knowledge, broaden their outlook and play an active part in society. This Continuing Professional Development (CPD) aspect of your training is one you will be expected to have fulfilled and it is a mandatory requirement. You are also likely to be questioned about your CPD activities when interviewed for Corporate Membership.*

**Q23 Is the Scheme “A” training only about technical matters?**

**A** *No, as an important part of your ‘training’ is related to your developing qualities concerned with **Leadership, Professionalism, Ethics, ‘Codes of Practice’** as well as the ‘**Engineer in Society**’ and the resulting responsibilities. This is, for instance, very much concerned with **Safety & Health** as well as the interaction between Technological Developments and the **Environment**.*

**Q24 Am I guaranteed to learn from my training experiences and gain the necessary understanding/appreciation leading to my Competency?**

**A** *No, as the old saying goes “you can lead a horse to water but you cannot make it drink” and so with training as much of the value of training depends on your **self-motivated** curiosity, your desire to find out, your use of your intellect, your powers of observation, your use of logic and analysis in problem solving and in your having a certain humility in accepting that although you are academically qualified you are a fresh graduate in a ‘new’ environment and still have much to learn!*

*Practical work by its very nature requires that you are self-motivated. Therefore, how you benefit from your training experience, at this ‘professional’ level, relies very much on you. In this the key factors are your enthusiasm; your curiosity; your desire to ‘know’ and find out ‘how’ and ‘why’ things work and why they don’t work; your powers of observation; your ability to **learn from the real life** situation; and your ability to identify problems and retrieve information to help solve them.*

**Q25 What and who determines the programme of training that I follow?**

**A** *Your **training programme** is agreed between the **company** and an HKIE specialist **Training Review Sub-Committee**. The programme must match the HKIE Model Training Guide requirements and provide the necessary experience for you to be able to meet the ‘Objectives’ set out in Your “**Training Record-of-Objectives**” for your discipline and the company must show that they have the facilities and staff able to provide the necessary experiences and properly support the programme.*



**Q26 Why in engineering practice for some disciplines, is basic workshop practice included?**

**A** *To give a 'feel' for commonly used materials, processes, procedures, hand/power tools and measuring techniques thereby allowing graduate trainees to gain an understanding of the industrial uses and parameters of each. To achieve this the training will:-*

- (a) include a necessary introduction to materials and commonly used standard hand and machine tools.*
- (b) act as an effective way to introduce the theoretical subject 'Workshop Technology'.*
- (c) be an important fundamental part of the introductory phase of Engineering Applications (EA1).*

**Q27 Are 'Exemptions' allowed in the 2 (or 3) years Schemes "A" for training on work experience carried out previously?**

**A** *Yes! If requested by the company as being considered relevant to its business and, matching the Training Objectives set. The following are eligible for exemption:-*

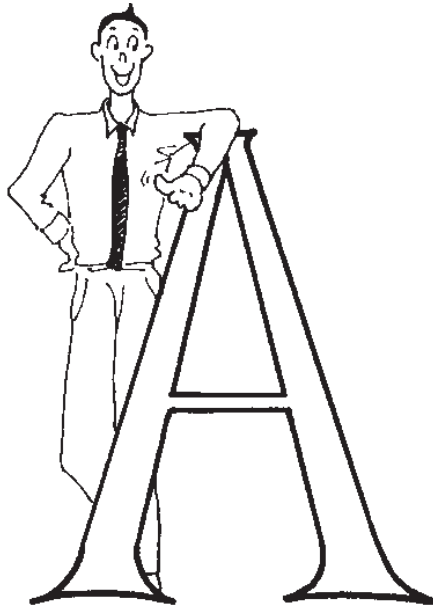
- (a) Pre-Degree work experience or Training.*

(b) *During a Degree:-*

- (i) *Training in an approved Industrial Training Centre (eg VTC, HKU, HKPU and HKUST.)*
- (ii) *Sandwich Course Training.*

(c) *Post Degree before Scheme “A” registration:-*

- (i) *Work Experience / Training.*



## Trainees to Note

Trainees are required to possess a Training Log Book, a CPD Log Book and a Training Record of Objectives all through their training period.

### Continuing Professional Development (CPD)

- (a) CPD is a mandatory element for all Scheme “A” trainees in all 20 disciplines.
- (b) Scheme “A” trainees should meet the minimum requirement of 45 CPD hours per year during their training period which include the following areas:
  - *Occupational Safety & Health*  
Minimum 18 CPD hours.
  - *Other Technical Matters not directly related to the trainee’s own discipline* (Such as Quality, Environmental, Information Technology, or other technical and related matters)  
Minimum 18 CPD hours.
  - *General Professional Matters* (Such as Business Management, Communication, Financial Management, Leadership, Legal aspects, Marketing and other related matters)  
Minimum 18 CPD hours.

### Exemption

- (a) Requests for Exemption are expected at the time of or soon after registration. Exemption application outside **6 months** from the date of registration will **NOT** be processed.
- (b) Requests for exemptions will only be accepted from the trainee’s company/ organisation, endorsed by the Engineering Supervisors.
- (c) Late submission of Form TD2 (*Employer’s Registration of Trainee*) by the Company/ Organisation cannot be used as a reason for Exemption application as a maximum of 6 months is already allowed for training back date.

### Extension

- (a) Trainees need to be aware that the training period can if required be extended until such time as all the Objectives are met.
- (b) The minimum requirement of 45 CPD hours per year should also apply to the training duration extended. Any extension period over 6 months are required to obtain additional CPD hours in proportion to their extended

training period. The extended training period accountable for CPD to be a 6 months block (ie in 6 consecutive months).

- (c) No CPD will be required if the training extension is less than 6 months.

### **Change of Company**

Registrations during Scheme “A” training are discouraged by the HKIE and change of company is not normally approved unless good reasons exist and with approval from the HKIE.

### **Training Registration Fees and Membership Fees**

- (a) Scheme “A” training will only be recognised if the Training Registration Fees and Membership Fees are paid.
- (b) Trainees must remain active in their Graduate or Student Membership (or otherwise stated) all through their Scheme “A” training.

### **Engineering Supervisor (ES)**

- (a) ES is expected to hold regular meetings with each trainee on a “one-to-one” basis to monitor trainee progress related to training and personal development.
- (b) Internal ES to interview trainees at least once a quarter, External ES to interview trainees at least once per month.
- (c) During the meetings, ES should check, comment, correct and sign with dates in trainee’s Training Log Book, CPD Log Book and Training Record of Objectives.

### **Tutor**

- (a) Tutor is whom the ES delegates the responsibility for “day-to-day” contact with trainees.
- (b) Tutor is required to read and comment on the monthly Log Book entries.

### **Training Certification**

At the end of training, trainees will be issued with a Training Certificate on condition that:

- (a) their Engineering Supervisors affirm that they have successfully completed the training and met all the objectives set.
- (b) their Training Log Book, CPD Log Book and Training Record of Objectives are considered satisfactory to the HKIE.



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