Important Notes:-

The class of Graduate Member of the HKIE 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.

To be eligible to register as trainees of the HKIE Scheme "A" Graduate Training (Scheme "A"), Graduate Members of the HKIE must also meet the academic requirements for Member in a Discipline.

M3 ROUTES TO MEMBERSHIP

SECTION 1 INTRODUCTION

1.1 Definition of a Professional Engineer

The following definition of a professional engineer used by the Conference of Engineering Societies of Western Europe and the United States of America (EUSEC) was adopted by the HKIE for the class of Member.

"A professional engineer is competent by virtue of his fundamental education and training to apply the scientific method and outlook to the analysis and solution of engineering problems. He is able to assume personal responsibility for the development and application of engineering science and knowledge, notably in research, designing, construction, manufacturing, superintending, managing and in the education of other engineers. His work is predominantly intellectual and varied, and not of a routine mental or physical character. It requires the exercise of original thought and judgement and the ability to supervise the technical and administrative work of others.

His education will have been such as to make him capable of closely and continuously following progress in his branch of engineering science by consulting newly published works on a world-wide basis, assimilating such information and applying it independently. He is thus placed in a position to make contributions to the development of engineering science or its applications.

His education and training will have been such that he will have acquired a broad and general appreciation of the engineering sciences as well as a thorough insight into the special features of his own branch of engineering. In due time he will be able to give authoritative technical advice and to assume responsibility for the direction of important tasks in his branch."

The following competences (in four broad areas, namely Applying Engineering Knowledge, Developing Technical Solutions, Managing Engineering Work and Upkeeping Professional Acumen) set the standard expected for engineers seeking professional recognition as Corporate Members by undertaking a competence-based assessment administered by the HKIE. In addition to the twelve elements of the competence standard, written communication skills are required.

1. Comprehend and apply knowledge of accepted principles underpinning widely applied good practice for professional engineering;

2. Comprehend and apply knowledge of accepted principles underpinning good practice for professional engineering that is specific to Hong Kong;

3. Define, investigate and analyse complex engineering problems in accordance with good practice for professional engineering;

4. Design or develop solutions to complex engineering problems in accordance with good practice for professional engineering;

5. Be responsible for making decisions on part or all of one or more complex engineering activities;

6. Manage part or all of one or more complex engineering activities in accordance with good engineering management practice;

7. Identify, assess and manage engineering risk;

8. Conduct engineering activities to an ethical standard prescribed by the HKIE;

9. Recognise the reasonably foreseeable social, cultural, health, safety, sustainability and environmental effects of professional engineering activities generally;

10. Communicate clearly with other engineers and others that he or she is likely to deal with in the course of his or her professional engineering activities;

11. Maintain the currency of his or her professional engineering knowledge and skills;

12. Exercise sound professional engineering judgement.

The Document of The HKIE Competence Standard for Professional Engineers (Corporate Members) including Competences and Performance Indicators as enclosed in Appendix A provides more details on the above competence standard.

1.2 Routes to Membership

The HKIE is a qualifying body for 21 Disciplines currently: Aircraft; Biomedical; Building; Building Services; Chemical; Civil; Control, Automation & Instrumentation; Electrical; Electronics; Environmental; Energy, Fire; Gas; Geotechnical; Information; Logistics & Transportation; Manufacturing, Industrial & Systems; Marine & Naval Architecture; Materials; Mechanical and Structural.

Membership of a Discipline is by assessment or recognition of a relevant professional qualification.

To be a Member of the HKIE, a candidate needs to satisfy the education, training and responsible experience requirements. This booklet explains in details the requirements of each.

There are three routes to Membership:

(a) Formal Training Route (Applicable for Scheme “A” Trainees)

(b) General Experience Route

(c) Mature Route

For the Formal Training and General Experience Routes, candidates must have:

(a) attained the age of 25;

(b) obtained an accredited honours degree or an acceptable equivalent in a recognised engineering or technological discipline;

(c) received adequate training; and

(d) received sufficient responsible experience.

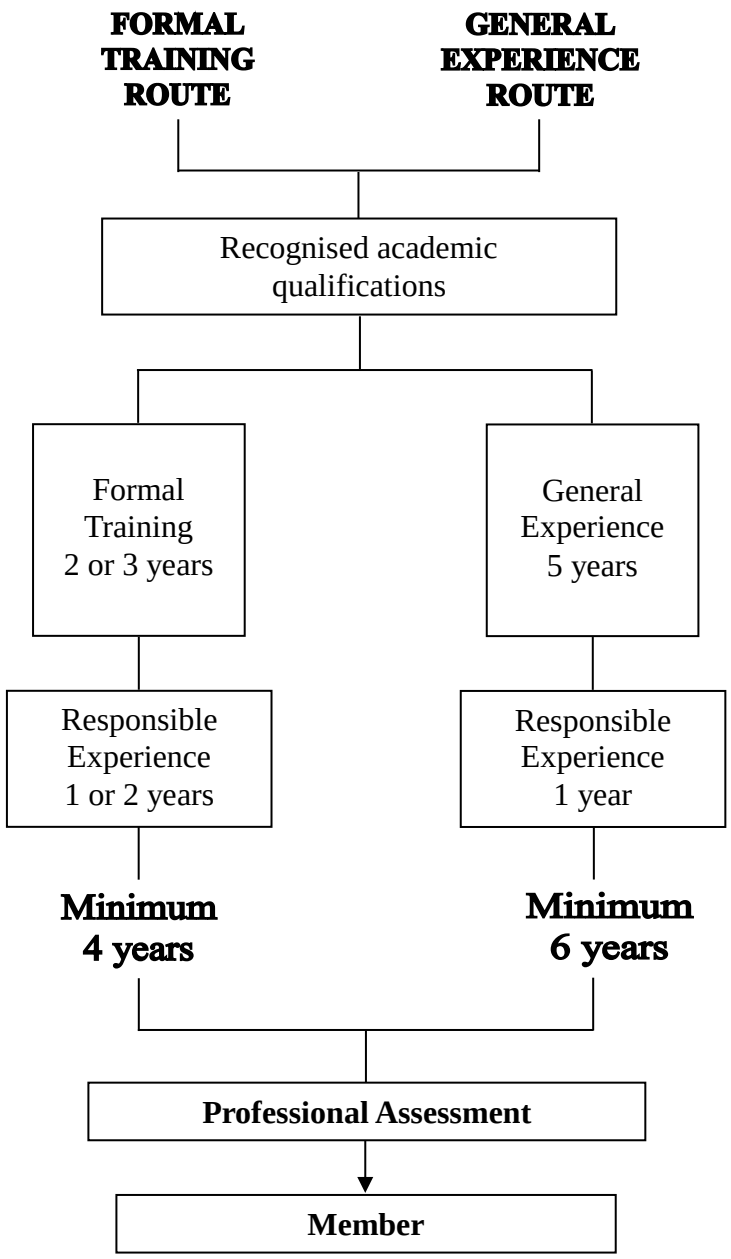
Under the Formal Training Route, candidates are required to have two years of approved formal training followed by two years of responsible experience for all Disciplines except Civil, Structural, Environmental and Geotechnical Disciplines. These four Disciplines require three years of approved formal training followed by one year of responsible experience.

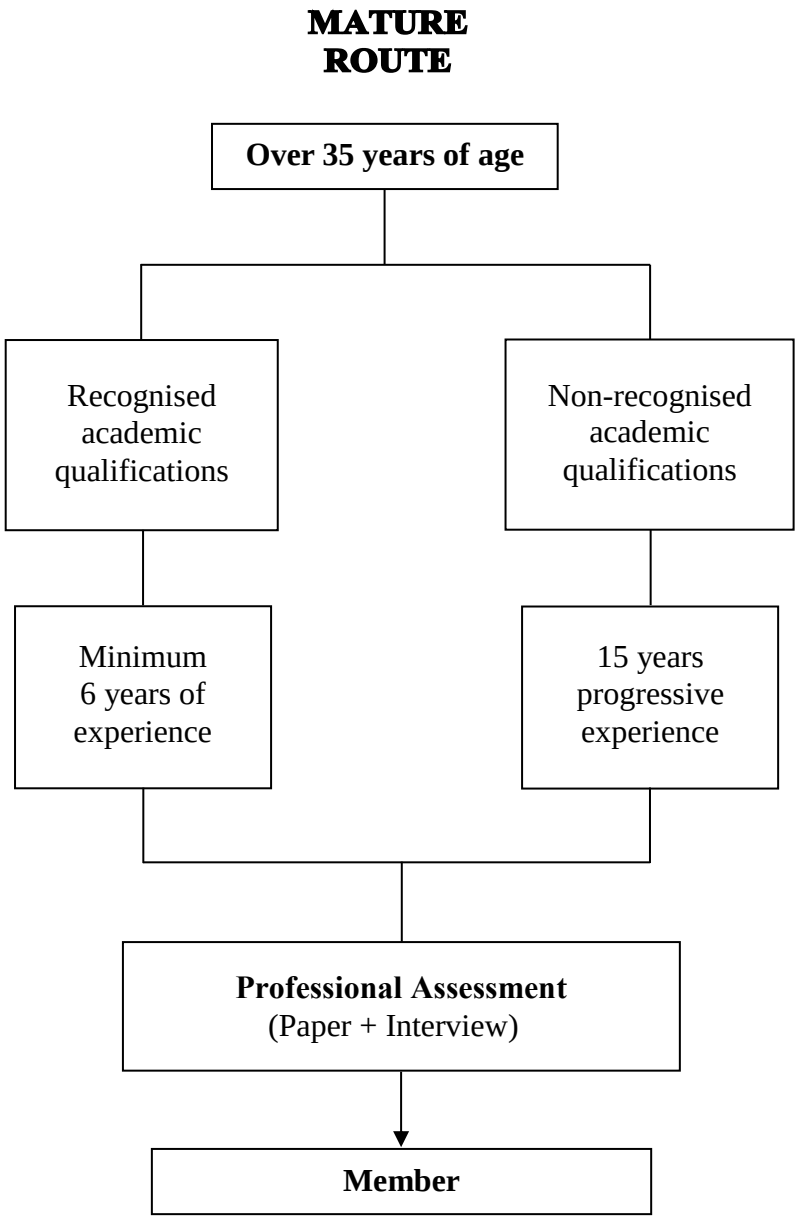
Under the General Experience Route, candidates who have not undertaken approved training are required to have a minimum of five years of general experience followed by one year of responsible experience; a total of six years of relevant working experience after graduation. Please see Section 3 for details.

Candidates over 35 years of age can be assessed via the Mature Route. There are generally two categories under this route: with recognised academic qualifications or without recognised academic qualifications. Please see Section 6 for details.

Candidates may consider the following other routes to Membership if deemed appropriate: Research and Development Route, Special Route for Specific Disciplines (Environmental, Information and Materials), Non-accredited Engineering Degrees Route, and Associate Membership Route. Details are available in the relevant Documents M40003, M40001, M40002 and M40006.

ROUTES TO MEMBERSHIP





SECTION 2 ACADEMIC REQUIREMENTS

Academic qualifications that meet the requirements of the HKIE for Member are:

(a) a first degree (Honours) accredited by the HKIE; or

(b) an accredited first degree as listed in the Washington Accord.

Other Honours degree level qualifications in engineering or technology or combinations of academic qualifications may be considered for the class of Member based on an individual assessment. Candidates are required to complete Form 1/AQ. Examples of academic qualifications which should be submitted for individual assessment include:

– first degrees from courses which have been subsequently accredited

– non-recognised first degrees in engineering or science 'topped-up' with a Master's or Doctorate degree in a relevant topic

– higher diplomas 'topped-up' with a Master's degree

– open university style degrees

– other combinations of academic qualifications, which taken together appear to be of substance

Candidates are required to demonstrate their academic achievements by:

– presenting their degree certificates and course transcripts; or

– proving that they have had their academic qualifications assessed by an appropriate authority, such as the Engineering Council, UK

Other qualifications, such as passes in Engineering Council (UK) Part II Examinations including the "Engineer in Society", ie. Part II (A), (B) and (C) up to and including year 2001 and passes in the Engineering Council Postgraduate Diploma in and after year 2002 up to and including 2012 may be acceptable for the class of Member by respective Disciplines on an individual basis.

All documents have to be certified true copies of the originals. Verification by a Corporate Member is acceptable.

The Document "Update on 'SARTOR3' (Standards and Routes to Registration 3) and 'UK-SPEC' (The UK Standard for Professional Engineering Competence)" provides information on the academic requirements for graduates from the UK. This is available under Downloads − Membership on the HKIE website.

SECTION 3 TRAINING AND EXPERIENCE REQUIREMENTS

3.1 Training Principles

Training is an essential element in the development of a professional engineer. It is a period of integrating theoretical knowledge learned in an academic environment with practical skills in real life in industry, and allowing trainees to achieve this integration with practice.

The training aims at developing trainees with the qualities of a professional engineer required in the areas of Applying Engineering Knowledge, Developing Technical Solutions, Managing Engineering Work and Upkeeping Professional Acumen. This approach is designed to ensure that young professional engineers can undertake engineering projects with proper regard for the technical, economic, financial, environmental, and social factors involved when they progress in their career development.

Training is intended to be "hands-on" and "learn by experience". It is based on the belief that this period is a natural progression in a trainee's professional development by putting theory into practice, and enhancing previous academic studies through the learning opportunities provided by real-life activities.

Training experiences should be relevant to the trainee's discipline and at the right level. Trainees are considered to learn best when they are practically and personally involved in their prescribed training activities. Real work helps ensure that the training experiences are relevant and that the trainees quickly become an active part of the production process within the company or organisation. Therefore, there should always be a careful balance between commercial interests and training needs.

Candidates' training should emphasise that although their academic knowledge, industrial training and experience may enable them to work as professional engineers, their future development will demand further study and experience to keep abreast of technological innovations. This Continuing Professional Development (CPD) will help ensure that they will be able to keep abreast of and apply new developments and techniques in other branches of technology, science, economics and sociology to their particular engineering specialty, or in management. In this respect, they will also need to take advantage of the CPD activities.

At the end of the training period, candidates must be capable of accepting, under guidance, professional responsibility in their particular branch of engineering.

3.2 Training Content for all Disciplines

It is essential that candidates receive training in accordance with the HKIE Consolidated Model Training Guide (CMTG) for Scheme "A" Training prepared for each HKIE engineering Disciplines.

Candidates are expected to have achieved all the training outcomes specified in the CMTG of their Disciplines at the end of the training. The three types of training outcomes are defined as follows:

(a) Common Core Outcomes – the outcomes to be achieved by trainees of all Disciplines

(b) Discipline-Core Outcomes – the outcomes to be achieved by trainees of a particular Discipline

(c) Company-Specific Outcomes (optional) – the outcomes set by Scheme "A" companies/organisations for their trainees to achieve

3.3 Formal Training Route (Applicable for Scheme "A" Trainees)

Under the Formal Training Route, a graduate should be formally registered with an approved HKIE Scheme "A" company/organisation which offers structured training for the above-mentioned training outcomes. The training is carried out under the guidance of an Engineering Supervisor and Training Tutor(s). The training period is three years for Civil, Environmental, Geotechnical and Structural Disciplines, and two years for other Disciplines.

For details of the Scheme "A", plesae refer to the HKIE website.

3.4 General Experience Route

3.4.1 General Requirements

The HKIE recognises that some candidates are unable either to take part in its formal training scheme, or in some cases any formal training schemes. In this regard, an alternative is offered to candidates who cannot follow the Formal Training Route leading towards Membership.

Under this route, the early experience that candidates acquire after satisfying the academic requirements of the HKIE may be accepted in lieu of formal training. However, such experience must have provided candidates with a sound and broad understanding of their particular branch of engineering in line with the general requirements for training in their particular discipline. In this respect they are advised to study carefully the training requirements to ensure that the general experience they have gained is of sufficient depth, breadth and quality serving as an acceptable alternative to formal training. Equally important is an understanding of the areas of engineering practice with which they have the experience and are required to be familiar with, together with management.

Candidates can obtain valuable guidance about the type of experience required from the Consolidated Model Training Guide (CMTG) published for Scheme "A" which are available on the HKIE website.

3.4.2 Supporters' Responsibilities

A candidate's early post-academic qualification experience must be vouched for by one or more of the candidate's supporters for Membership. The supporter(s) will be required to state in what capacity they can uphold their judgement of the candidate's equivalent training that has been acquired through general experience in the practice of an engineering discipline.

3.4.3 Record of Experience Obtained

Candidates should keep a record giving full details of past and present employers, and the nature of experience received, to help document the formal application to the HKIE for the class of Member.

3.4.4 Duration

For all engineering Disciplines under the General Experience Route, candidates are required to have a minimum of five years (post-degree) general experience in lieu of a formal training programme. Structured training schemes not formally pre-approved by the HKIE may be considered for exemption towards the five-year period on a case-by-case basis. The Council's decision on exemption is final.

3.4.5 Training Obtained Overseas

Graduates who have obtained their tertiary educational qualification abroad and remain overseas to obtain initial post-graduate training and who are not registered for Scheme "A", are advised that such training will normally be assessed as general experience.

However, such overseas experience must meet the HKIE's training requirements as set out at Parts 3.1 and 3.2 of Section 3 above. Candidates should therefore provide training records and documentary evidence when applying for Membership. Candidates submitting evidence of their training and/or experience are recommended to use a personal logbook.

Exceptionally, the HKIE's Qualification and Membership Board may accept training carried out under an overseas professional institution formal training scheme which has been judged equivalent to Scheme "A". In this case, a candidate must provide full and verified documentary evidence of such training for verification by the HKIE.

3.4.6 Pre-degree Training/Experience

Relevant experience gained before obtaining an acceptable academic qualification may be counted towards the period of general experience. The maximum period that can be taken into account is three years.

Claims for period of general experience will be considered on a case by case basis. The Council's decision on the period of general experience is final.

3.4.7 Postgraduate course and academic appointments

A relevant higher degree may be accepted as part of the general experience period as shown in the table below:

Higher Degree Type	General Experience Period (maximum)
Relevant master's by course work and project normally taking 12 months full-time or 24 months part-time	6 months

Higher Degree Type	General Experience Period (maximum)
Master's by research normally taking 24 months	12 months
Relevant doctorate course normally taking 36 months, subject to a review of the practical content of the project or research undertaken. (Evidence of the practical aspects should be provided with the application form.)	18 months

For experience gained in academic appointments, emphasis should be given to hands-on applications of practical engineering, such as research projects, the design of laboratories, and industrial consultation.

3.5 Responsible Experience Requirements

3.5.1 Formal Training Route (Applicable for Scheme "A" Trainees)

In addition to completing the training requirements set out at Parts 3.1 and 3.2 of Section 3 above, candidates for the class of Member are required to have held a position of responsibility, requiring knowledge and practice of an engineering discipline, for the following minimum periods of responsible post-training experience:

(a) Civil, Environmental, Geotechnical and Structural Disciplines: 1 year

(b) All other Engineering Disciplines: 2 years

Upon completing the training programme, candidates are expected to exercise judgement and undertake responsibility in a professional capacity.

3.5.2 General Experience Route

In addition to the general experience duration specified at item 3.4.4 above, candidates for the class of Member are required to have a minimum of one year of responsible experience. This applies to all Disciplines.

As experience is gained, the degree of responsibility will normally increase progressively up to and beyond the stage at which the individual is accepted for Member. It is important that work, regarded as constituting responsible experience, is professional and involves responsibility for the management of people and resources. The definition of a professional engineer in Section 1 above is a good reference for the duties and responsibilities to be undertaken.

SECTION 4 CONTINUING PROFESSIONAL DEVELOPMENT (CPD) REQUIREMENT AND GUIDELINES

4.1 Introduction

Continuing Professional Development (CPD) is an ongoing necessity in the ever changing technological world. Practising professional engineers should aim to remain competent throughout their careers so that they can properly carry out their various duties. Engineers need to take opportunities to update their depth and breadth of knowledge and expertise, and develop the personal qualities required to fulfil their roles in industry and society.

4.2 The HKIE CPD Definition

CPD is a systematic maintenance, improvement and broadening of relevant knowledge and skills, and the development of these qualities necessary for successful carrying out of professional duties throughout an engineer's career. It aims at enhancing individual worth and thus corporate performance.

CPD applies to both Corporate Members and to engineers in the pre-Corporate Member stage.

4.3 General Scope of CPD

CPD covers matters of direct technical relevance as well as broader studies that are important to the HKIE Members to further their careers. These include professional ethics, communication, environmental matters, financial management, leadership skills, legal aspects, marketing, and occupational safety and health.

4.4 General Format of CPD

The format of CPD activities includes, but not limited to, participating in and organising courses, lectures, seminars/symposia, conferences, presentations, workshops, industrial attachments and visits, e-learning and professional activities. These may be provided by the HKIE, the engineering profession, and a variety of other organisations.

4.5 CPD Requirements

The HKIE specifies a minimum CPD requirement for those at the pre-Corporate Member stage and also at the Corporate Member stage. The CPD record will be taken into account when considering any application for Fellowship.

Routes	CPD Requirement	Scope of CPD
Formal Training Route (Applicable for Scheme "A" Trainees)	A minimum average of **45 hours per year** from the commencement date of Scheme "A", up to applying for Professional Assessment.	A minimum of **54 hours** during the Scheme "A" training period(*) must include the following areas: (i) **Occupational Safety & Health** Minimum **18 CPD hours**. (ii) **Other Technical Matters not directly related to the trainee's own Discipline** (Examples: quality, environmental, information technology, or other technical and related matters) Minimum **18 CPD hours**. iii) **General Professional Matters** (Examples: business management, communication, financial management, leadership, legal aspects, marketing, and other related matters) Minimum **18 CPD hours**. CPD must be **balanced** between matters of **Direct Technical** interest and those of a **General Professional** nature. In-house CPD activities should account for a maximum of 50% of CPD days.
General Experience Route	A minimum average of **45 hours per year** for the 6 years immediately prior to their application for Professional Assessment.	It is desirable to have as much variety as possible and a balance between technical and contractual/professional subjects should be sought. The CPD requirement for Scheme "A" Training is a good reference for the scope of CPD.

Routes	CPD Requirement	Scope of CPD
Mature Route	A minimum average of **45 hours per year** for the 3 years immediately prior to their application for Professional Assessment.	CPD covers both matters of direct technical relevance and matters of a broader professional nature. For the latter, one or more of the following could be emphasised: management, leadership, financial, safety, health and environmental issues.

(*) Note: Trainees must complete this mandatory requirement during the Scheme "A" training period.

One CPD day is counted as 6 hours. Any claim of CPD activities of more than 6 hours in a calendar day must be approved by the Engineering Supervisor (for Formal Training Route) or the relevant Discipline Advisory Panels (for General Experience or Mature Route).

It is not practical for the HKIE to approve CPD activities. Corporate Members and engineers in the pre-Corporate Member stage must determine whether or not an activity fits the CPD definition in their own particular circumstances.

For the pre-Corporate Member stage it is for the **Engineering Supervisor** (for Scheme "A" trainees) or a **Responsible Person** (i.e. normally an appropriate senior person in the employing organisation) to consider whether the activity should be endorsed in the logbook befitting the HKIE CPD criteria.

Postgraduate degree programmes are not usually considered as CPD. Nevertheless, engineers may find that some programme modules are helpful towards their professional development and match the HKIE CPD criteria. In such cases, they should seek the endorsement of taking some modules of postgraduate degree programmes as CPD from their Engineering Supervisor or Responsible Person.

The suitability of a CPD activity should be decided in relation to the HKIE CPD definition above.

4.6 The CPD Logbook

The CPD logbook is intended to cover full career from graduation until retirement. It has been produced as a convenience to Members and as a tangible expression of the HKIE's commitment to CPD. The logbook will provide the CPD activities undertaken in chronological order. It could therefore be useful to apply for employment or to join other organisations.

A record of CPD activities should be maintained in the HKIE CPD logbook or in similar format. A template of CPD record for Scheme "A" is appended below for reference.

(a) For engineers in pre-Corporate Member Stage, the far right-hand column is for endorsement by the **Engineering Supervisor** (for Scheme "A" trainees) or a **Responsible Person** who will normally be a senior person in the organisation. It is for them to consider whether the activity should be endorsed in the logbook befitting the HKIE CPD criteria;

(b) The column headed **"Name of CPD Activity and Organiser"** should record the CPD activity title and the major topics covered, and the name of organiser of the activity (e.g. The HKIE);

(c) Scheme "A" trainees have to indicate the category of the CPD activity under the column headed **"Category"**.

Record of Continuing Professional Development

Date(s)	Name of CPD Activity* and Organiser	Category	CPD Hours Claimed	Endorse-ment by ES/RP*

* For scope and format of CPD activities, please refer to "General Scope of CPD" and "General Format of CPD" of this section

ES = Engineering Supervisor, RP = Responsible Person

SECTION 5 PROFESSIONAL ASSESSMENT

5.1 Introduction

Professional Assessment is a process of assessing the extent to which candidates for the Class of Member meet the admission requirements set out in Section 3 above, and to ascertain the quality of their technical and responsible experience in their branch of engineering. An interview and a writing assessment are the two major parts of the Professional Assessment.

The time taken to achieve the standards required for Member varies from candidate to candidate. The minimum period is four years (See Section 3 above). Candidates over 35 years of age may be admitted under a different procedure as Mature Candidates (See Section 6 below).

The HKIE is a qualifying body for a number of Disciplines. Some Disciplines have specific requirements for the Professional Assessment. **Candidates should check the requirements for the Disciplines they seek admission to. Additional information on the various Disciplines and routes to Membership included in Part 1.2 of Section 1 above is available on the HKIE website**.

5.2 Exemption from Professional Assessment

Certain candidates may be exempted from part or all of the Professional Assessment and may proceed directly to Member. These include Corporate Members of Professional Institutions which have Reciprocal Recognition Agreements with the HKIE. Please see Document M14343 which is available on the HKIE website for details.

5.3 Procedure

(a) Candidates should submit the HKIE form for Application for the Class of Member or Additional Discipline for Corporate Member (Form 1/MD) with supporting signatures. They should complete the necessary periods of training and experience by the date of submission.

(b) Candidates should also submit reports, drawings and documents as detailed below, or as prescribed in the additional information of respective Disciplines.

(c) The HKIE may at any time refer a submission back to the candidate for specific reasons.

(d) Interviews will be arranged for candidates as soon as applications and submissions have been received and checked. The writing assessment normally follows the interview.

(e) Candidates will be notified of the result of their Professional Assessment as soon as a decision has been made and ratified by the Council. Indications of the areas of weakness or failure to satisfy the Assessors will be given to unsuccessful candidates, but the HKIE will not enter into any further correspondence concerning the decision.

5.4 Submissions required from Candidates

Candidates must submit the following documents for the Professional Assessment:

5.4.1 Report on Training and Experience

The objective of this report is to inform the Assessors about the candidate's training and experience (Section 3 "Training and Experience Requirement"). The report provides evidence to demonstrate that the candidate meets the HKIE Competence Standard for Professional Engineers (Corporate Members). It should be concise, between 1,600 and 2,000 words, in English, typewritten on single sides of A4 paper and submitted in duplicate. At the top of the report, candidates must set out the specific periods of training and experience that they have acquired in chronological order, giving inclusive dates in months and years.

The report must not be a mere inventory of work prepared and executed. Candidates should:

(a) describe in chronological order the tasks in which they have been employed, state the precise position they have occupied in each case and describe clearly the degree of responsibility they have been assigned;

(b) use the first person (I, me, my) to show their personal contribution;

(c) indicate the size and cost of the works;

(d) elaborate on any particular problems they have encountered and how they arrived at viable solutions;

(e) provide evidence to demonstrate that the competences set out in the HKIE Competence Standard for Professional Engineers (Corporate Members) are achieved by adding notations in the right margin for the competences (C1, C2…etc.) next to the passage of text. At most four relevant competences should be quoted at a time.

5.4.2 Drawings and Documents

Candidates are required to provide evidence or examples of recent work to support their claim of attaining professional status, such as reports, plans, calculations, photographs, etc. as appropriate. All these documents should be submitted with the report.

5.4.3 HKIE Logbook for Candidates under the Formal Training Route

The HKIE logbook or logbooks from other recognised institutions' training schemes will be accepted.

5.4.4 Continuing Professional Development (CPD) Record

Candidates should provide a CPD record to show that they have met the mimimum required number of CPD hours. Please refer to Section 4 "CPD Requirement and Guidelines" above for details.

5.4.5 Supporting Documentation for Candidates working in Academic Institutions

Engineers who have spent the majority of their experience working in academic institutions should submit a report based on an engineering research project, instead of samples of recent works. The report should include a brief summary of the research project (or projects), stating the subject matter and objectives, and a full list of publications and reports. The report should reflect the candidate's experience in the design and setting up of equipment, carrying out of research, reporting on the results and cost implications, and drawing appropriate conclusions. A thesis on its own prepared for a higher degree is not acceptable instead of the report.

All documents should be the candidate's own work and must be verified by a Corporate Member of the HKIE or the candidate's employer.

All documents submitted will be treated as confidential and will be returned to the candidates. Candidates should, however, retain copies of all documents submitted as the HKIE does not accept responsibility for any lost or damaged documents.

5.5 Interview

The interview will last for about 45 minutes. For both normal and mature candidates, Assessors will aim to satisfy themselves that candidates have spent sufficient time on suitable work and self-reflection on the training/work experience. Both Assessors may question candidates to ascertain how far they have taken advantage of the opportunities provided during their training and experience. They will question candidates to ensure that all the competences set out in the HKIE Competence Standard for Professional Engineers (Corporate Members) are achieved so as to satisfy a recommendation for election to Membership.

Except Reciprocal Recognition Agreement Route, Mature Route and Associate Membership Route, candidates via other routes to Membership in all Disciplines will be required to give a mandatory 15-minute presentation of their project submitted for Professional Assessment before the interview. The objective is to test the candidate's presentation skill as a professional engineer. All candidates for Professional Assessment should also refer to any additional requirements for a particular Discipline.

5.6 Essay/Technical Write-Up

The essay/technical write-up is intended primarily to assess candidates' written communication skills which include generic English communication and technical communication. Candidates should demonstrate their ability to communicate effectively with others in the course of engineering activities.

The essay/technical write-up will usually follow immediately after the interview. Candidates may be requested to take the essay/technical write-up at a different time and venue to be arranged by the Assessors.

Candidates may use a dictionary during the essay/technical write-up but may not refer to other books or notes. Electronic and other devices are not permitted. The essay/technical write-up must be prepared in English by hand-writing. Use of pencil is not allowed.

Corporate Members applying for Additional Discipline (not applicable to Structural Discipline) are exempted from the essay/technical write-up.

5.6.1 Essay

Candidates will receive a choice of two topics relating to their experience, or the broader issues of engineer in community. They may seek clarification of the topics within the first 15 minutes. Two hours are allowed for this task. The essay should be approximately 1,600 words. An essay of less than 1,000 words is not likely to pass. The candidate should be able to present his/her understanding on a subject and/or present a logical argument on an engineering topic specified by the Assessors.

5.6.2 Technical Write-up

Subject to the requirements of individual Disciplines, ten Disciplines (Aircraft; Building Services; Control, Automation & Instrumentation; Electrical; Electronics; Energy; Environmental; Gas, Marine & Naval Architecture and Mechanical) accept a combination of International English Language Testing System (IELTS) Academic result plus technical write-up as an alternative to the essay. Candidates applying for Membership in the respective Disciplines may choose between the essay and technical write-up.

If technical write-up is used, candidates will receive one topic which is relevant to their experience. This can be a short written test such as working paper, brief report and memorandum. 45 minutes are allowed for this task. Candidates are expected to write approximately 500 words. A technical write-up of less than 400 words is not likely to pass. The candidate should be able to present technical information in a format specified by the Assessors.

To be eligible for choosing a technical write-up, candidates must provide a valid IELTS Academic result with an overall IELTS score of 6.5 or above, and a sub-score of 6 or above for each skill (Listening, Reading, Writing and Speaking) at the time of Membership application. The IELTS Academic results must be verified with a supporter's initial

5.7 Judging and Marking the Essay/Technical Write-Up

Assessors will judge and mark the essay/technical write-up against the following criteria:

5.7.1 Generic English Communication Skills

Generic English communication skills refer to clarity of argument, presentation and accuracy. The candidate must demonstrate an ability to write concise and grammatically correct English with proper presentation relevant to the intended readers.

- Are the candidate's ideas expressed logically?
- Does the text have a discernible and satisfactory framework or pattern?
- Is the candidate's argument clear and easy to understand?
- Are paragraph divisions and sub-headings sensibly chosen?
- Are the sentences easy to understand?
- Has the candidate avoided jargon, catchphrases and undefined abbreviations? (Abbreviations should be accompanied by full spelling when first used).
- Are spelling and punctuation correct?

5.7.2 Technical Communication Skills

Technical communication skills refer to the candidate's knowledge and the relevance of the ideas expressed. The candidate must demonstrate a reasonable depth and breadth of knowledge in the subject area.

- Does the candidate understand the subject?
- Does the answer cover the essences of the topic set or only a part of it?
- Has the candidate refrained from padding the text with irrelevant and repetitive material to achieve the desired length?

5.8 Final Assessment

A candidate will be recommended for admission to Member if the submission, interview result and writing assessment result are all considered acceptable.

However, the Assessors may exercise discretion before making the final decision. For example, if the Assessors are not satisfied with the drawings or any other part of a candidate's submission, and it becomes apparent during the interview that the candidate should be able to rectify this deficiency, the candidate may be given an opportunity to submit an additional document (e.g. drawing, calculations or bill of quantities). In this event, the Assessors will give the candidate a definite period of time to produce the document (normally about one month).

SECTION 6 MATURE ROUTE

Candidates over 35 years old may seek admission to the Class of Member via the Mature Route. There are two routes for Mature Candidates, depending on whether they have recognised academic qualifications.

6.1 Candidates with Recognised Academic Qualifications

Candidates with recognised academic qualifications, training and experience taking the Professional Assessment procedures via the Mature Candidate Route instead of the Normal Candidate Route should normally have 6 years of post-qualification experience in a relevant branch of engineering. Discretion, however, may be exercised by the relevant Discipline Advisory Panel. They must follow the assessment procedures as detailed in item 6.3 to item 6.6 below.

6.2 Candidates without Recognised Academic Qualifications

Mature candidates in this category are persons with considerable responsible experience as engineers, but (i) may not have or (ii) may not wish to claim to have the required academic qualifications prescribed for Member. They should have the experience in posts of increasing responsibility in a relevant branch of engineering over a period of at least 15 years. They should have attained a position demonstrating a level of competence that would have met the requirements for the class of Member if they have the required academic qualifications. They must follow the assessment procedures as detailed in item 6.3 to item 6.6 below.

6.3 Procedure

(a) Candidates should apply on the HKIE form for Application for the Class of Member or Additional Discipline for Corporate Member (Form 1/MD) with supporting signatures, information and papers specified on the form. They should indicate on the form that they are applying via the Mature Route and ensure that their supporters are aware of this.

(b) If candidature is approved, candidates shall either submit a paper that they have already written as described in item 6.4.1 below, or they will be allowed two years to prepare and submit a paper.

(c) Candidates shall submit a brief synopsis of paper setting out the main sections and method of treatment for consideration of the Discipline Representative.

(d) The candidate's paper will be assessed by a panel of Assessors on behalf of the HKIE. If the panel considers it satisfactory, the candidate will be required to attend an interview. An interview will not be conducted if the paper is considered unsatisfactory, but the candidate may be given an opportunity to present the paper again after modification. All papers will be treated confidentially.

(e) The HKIE may refer the submission back to the candidate at any stage.

(f) Candidates will be notified of the result of their application as soon as a decision has been made and ratified by the Council. Indications of areas of weakness or failure to satisfy the Assessors will be given to unsuccessful candidates, but the HKIE will not enter into any further correspondence concerning the decision.

6.4 Submissions required from Candidates

Mature candidates must submit the following documents for the Professional Assessment:

6.4.1 Submission Paper

Candidates are required to submit a single-topic paper in English of approximately 5,000 – 10,000 words. It may be based on a design study or a report of original work and must be the candidate's own work. If the paper is a collaborative work, the candidate's own contribution must be made clear.

Original papers must be typed or printed double-spaced on single sides of A4 paper. Two copies should be provided and signed by the candidate's employer or principal, who should preferably be a Corporate Member of the HKIE, to certify that the paper is the candidate's own unaided work.

In the paper, candidates are expected to:

(a) offer an ordered and critical exposition of the subject;

(b) define the problems with detailed engineering solutions, and;

(c) relate the application of fundamental engineering principles to some aspects of engineering practice.

Candidates should not merely undertake a historical review except as a necessary background to the subject. Most candidates will find it more profitable to concentrate in depth on an engineering achievement in which they have personally played a major part than to attempt to cover a wider field. Where appropriate, the text can be illustrated by clearly-drawn sketches and/or diagrams. Candidates should provide a reference list if they use any source material.

Candidates should provide evidence to demonstrate that the competences set out in the HKIE Competence Standard for Professional Engineers (Corporate Members) are achieved as far as possible by adding notations in the right margin for the competences (C1, C2…etc.) next to the passage of text. At most four relevant competences should be quoted at a time.

6.4.2 Record of CPD

Candidates should provide a CPD record to show that they have met the mimimum required number of CPD hours. Please refer to Section 4 "CPD Requirement and Guidelines" above for details.

6.5 The Professional Assessment Interview

Candidates whose submissions are satisfactory will be required to attend an interview at a designated place and time with two Assessors of the HKIE. Candidates may bring to the interview other materials, such as design study notes and/or drawings of original works. These materials should help the candidates demonstrate their attainment of a standard of knowledge in their particular field of engineering. For candidates without recognised academic qualifications, this could also help justify exemption from the formal academic requirements for Member.

The Assessors will judge whether candidates have demonstrated sufficient understanding of the principles of engineering. They will ask candidates questions to ensure that all the competences set out in the HKIE Competence Standard for Professional Engineers (Corporate Members) are met so as to satisfy a recommendation for election to Membership.

6.6 Essay/Technical Write-up

Mature Candidates may be required to write an essay/technical write-up at the discretion of the Assessors. The requirements and criteria are set out in Parts 5.6 and 5.7 of Section 5 “Professional Assessment”.

SECTION 7 RESIT OF PROFESSIONAL ASSESSMENT

Guidance notes on Resit of Professional Assessment and Appeal Procedures are available on the HKIE website.

Appendix A

THE HKIE COMPETENCE STANDARD FOR PROFESSIONAL ENGINEERS (CORPORATE MEMBERS) INCLUDING COMPETENCES AND PERFORMANCE INDICATORS

1. COMPETENCE STANDARD

A competence standard is an indication of an expected level of performance. The competence-based assessments conducted by the Hong Kong Institution of Engineers (the HKIE) require applicants to provide sufficient outcome evidence to demonstrate that they are able to consistently apply knowledge, understanding and skills to the standard expected of a professional engineer at Corporate Member level.

2. FORMAT

The HKIE Competence Standard for Professional Engineers (Corporate Members) consists of the following:

Competences: these represent broad areas of professional engineering competence and set the standard expected for professional recognition as Corporate Members of the HKIE.

Performance indicators (bullet points under each competence): these provide further detail to elaborate the meaning of each competence thereby enabling the applicants and Assessors to have a clear understanding of the abilities required to demonstrate each competence. The performance indicators are neither minimum requirements nor exhaustive elaboration of the concerned Competence.

Definitions: these provide a critical component of the standard and need to be considered carefully by applicants when they are preparing their portfolio of evidence to demonstrate that they meet the competence standard.

3. ASSESSMENT

The candidates undertaking Professional Assessment are expected to provide outcome evidence of their current competence to their Assessors as a demonstration of meeting all the competences. The Assessors, however, consider the totality of the outcome evidences provided and make a holistic assessment as to whether an applicant meets the HKIE Competence Standard for Professional Engineers (Corporate Members).

4. DEFINITIONS

4.1 Discipline

"Discipline" means a field of engineering in which a member can practically be competent to practice. The competence of the applicant will be assessed with respect to the expert knowledge and experience of the concerned Discipline.

4.2 Complex Engineering Activities

"Complex engineering activities" mean engineering activities or projects that have some or all of the following characteristics:

a. involve the use of diverse resources including people, money, equipment, materials and technologies

b. require resolution of critical problems arising from interactions between wide-ranging technical, engineering and other issues

c. have significant consequences in a range of contexts

d. involve the use of new materials, techniques, or processes or the use of existing materials, techniques, or processes in innovative ways

4.3 Complex Engineering Problems

"Complex engineering problems" have some or all of the following characteristics

a. involve wide-ranging or conflicting technical, engineering, and other issues

b. have no obvious solution and require originality in analysis

c. involve infrequently encountered issues

d. are problems beyond the scope of standards and codes of practice for professional engineering

e. involve diverse groups of stakeholders with widely varying needs

f. have significant consequences in a range of contexts

g. cannot be resolved without in-depth engineering knowledge

4.4 Method of Analysis

The techniques used in quantitative analysis will vary depending on the field of engineering practices which may include the use of computer, mathematical or reliability modeling, statistics, or other planning tools.

4.5 Design and Development

Design and development are a conceptual process used to bring together innovation, aesthetics and functionality to plan and create an artefact, product, process, component or system for solving a complex engineering problem. The design and/or development process may develop the shape, size and selection of material and components for engineering products/outcomes.

Design and development also include engineering planning, an example of which is the process of locating facilities and items of engineering construction taking into account all the factors affecting their relationship and their inter-relationships with the external environment.

4.6 Responsibility for Making Decisions for Complex Engineering Activities

Applicants may be taken to have been responsible for making decisions for complex engineering activities when they have:

a. planned, designed, co-ordinated and executed a (small) project, or

b. undertaken part of a larger project based on an understanding of the whole project, or

c. undertaken novel, complex or multi-disciplinary work

5. INDIVIDUAL COMPETENCE REQUIREMENTS

The following competence standard sets the standard expected for engineers seeking professional recognition as Corporate Members by undertaking a competence-based assessment administered by the HKIE. The twelve competences are categorised into four broad areas as follows:

- Applying Engineering Knowledge (C1, C2, C11)
- Developing Technical Solutions (C3, C4)
- Managing Engineering Work (C5, C6, C7, C12)
- Upkeeping Professional Acumen (C8, C9, C10)

Competence 1 (C1): Comprehend and apply knowledge of accepted principles underpinning widely applied good practice for professional engineering

a. possess a Washington Accord recognised degree or recognised equivalent qualification or has demonstrated equivalent knowledge (Note 1)

b. understand and grasp appropriate engineering knowledge

c. work from first principles to make reliable predictions of outcomes

d. seek advice, where necessary, to supplement own knowledge and experience

e. read, understand, evaluate literature, and put into practice new knowledge

Note 1: An applicant who has passed an academic assessment conducted by the HKIE or has been assessed as a mature candidate is considered as having "recognised equivalent qualification or has demonstrated equivalent knowledge".

Competence 2 (C2): Comprehend and apply knowledge of accepted principles underpinning good practice for professional engineering that is specific to Hong Kong* (Note 2)

a. demonstrate an awareness of legal requirements and regulatory issues in Hong Kong relevant to the Discipline under assessment

b. demonstrate an awareness of and apply appropriately the Discipline specific engineering requirements in Hong Kong relevant to the Discipline under assessment

Note 2: The Hong Kong legal, regulatory and special engineering requirements may vary from a Discipline to another. For example, the said requirements may be very different for Information Discipline than the Structural Discipline.

Competence 3 (C3): Define, investigate and analyse complex engineering problems in accordance with good practice for professional engineering

a. identify and understand the scope of the problem

b. look into details relevant information using quantitative and qualitative techniques

c. verify the correctness of results

d. conduct any necessary research and reaches substantiated conclusions

Competence 4 (C4): Design or develop solutions to complex engineering problems in accordance with good practice for professional engineering

a. identify needs, requirements, constraints and performance criteria

b. formulate concepts and design possible solutions based on engineering principles

c. engage stakeholders in developing possible solutions

d. evaluate the pros and cons of the possible solutions and select a solution that best satisfies needs, requirements and criteria

e. plan and implement effective, efficient and practical systems or solutions

f. evaluate outcomes against original criteria and assumptions

Competence 5 (C5): Be responsible for making decisions on part or all of one or more complex engineering activities

a. take full responsibility during the course and/or for the outcome of complex engineering activities undertaken

b. act appropriately and make decisions during the course and/or for the outcome of complex engineering activities undertaken

Competence 6 (C6): Manage part or all of one or more complex engineering activities in accordance with good engineering management practice

a. plan, schedule and organise projects to deliver specified outcomes

b. apply appropriate quality assurance techniques to manage engineering projects

c. manage resources, including personnel, finance and physical resources in engineering projects

d. manage conflicting demands and expectations

e. demonstrate awareness of financial considerations in managing engineering projects

Competence 7 (C7): Identify, assess and manage engineering risk

a. locate hazards, apportion frequency of occurrence and formulate risk profile in design and operations

b. develop corresponding management policies, procedures and protocols to manage

c. manage risks in work and operations according to the policies, procedures and protocols

Competence 8 (C8): Conduct engineering activities to an ethical standard prescribed by the HKIE

a. demonstrate understanding of HKIE Rules of Conduct

b. behave in accordance with the HKIE Rules of Conduct in difficult circumstances (including demonstrating an awareness of limits of capability; acting with integrity and honesty and demonstrating self management)

Competence 9 (C9): Recognise the reasonably foreseeable social, cultural, health, safety, sustainability and environmental effects of professional engineering activities generally

a. consider and take into account of the impact and long-term effects of engineering activities on social, culture, health, safety, sustainability and the environment

b. project the outcome of professional engineering activities in the context of social, cultural, health, safety, sustainability and environmental aspects

Competence 10 (C10): Communicate clearly with other engineers and others that he or she is likely to deal with in the course of his or her professional engineering activities

a. use oral and written communication to convey clear message to his/her audience that meet their needs and expectations of his/her audience

b. communicate using a range of media suitable to the audience and context

c. treat people with respect

d. develop empathy and uses active listening skills when communicating with others

e. operate effectively as a team member

Competence 11 (C11): Maintain the currency of his or her professional engineering knowledge and skills

a. demonstrate a commitment to extending and developing knowledge and skills

b. participate in education, training, mentoring or other programmes contributing to his/her professional development

c. engage in collaborative activities with professional engineers

Competence 12 (C12): Exercise sound professional engineering judgement

a. demonstrate the ability to identify alternative options

b. demonstrate the ability to choose between options and justify decisions

c. be recognised by peers for his/her ability to exercise sound professional engineering judgement

Written communication skills

In addition to the abovementioned twelve competences, written communication skills are required.

a. ability to communicate effectively with others in the course of engineering activities

- Generic English communication skills refer to clarity of argument, logical presentation and accuracy. The candidate must demonstrate an ability to write concise and grammatically correct English with proper presentation relevant to the intended readers.

- Technical communication skills refer to the candidate's knowledge and the relevance of the ideas expressed. The candidate must demonstrate a reasonable depth and breadth of knowledge in the subject area.

Please refer to the HKIE website for the latest version of the information booklets and application forms for Membership and Scheme "A" Graduate Training:
https://www.hkie.org.hk/en/membership/download_mem2/
https://www.hkie.org.hk/en/membership/download_training/