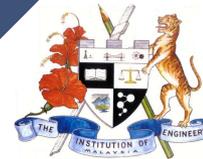


ENGINEERING PROGRAMME ACCREDITATION: A MALAYSIAN PERSPECTIVE



IEM

The Institution of Engineers, Malaysia

IR DAVID LAI KONG PHOOI



INTRODUCTION

University education provides the learning base on which competence for a professional engineering career is built.

It is important that the education provides the graduates with the generic attributes.

It is equally important that the education process be accredited by the Authority in the country and be given assurance to the students, the universities, the public and the profession that the education will indeed provide a graduate with the required attributes.

Through the process of accreditation, the Authority ensures that graduates from an accredited programme are adequately prepared to enter and to continue the practice of engineering.

GLOBALISATION AND ENGINEERING MOBILITY



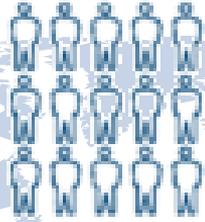
The **Washington Accord** is an international accreditation agreement for professional engineering academic degrees, between the bodies responsible for accreditation in its signatory countries.

Malaysia was admitted as a full member of the Washington Accord in **June 2009**.

With Malaysia being a full member, engineering graduates of accredited programmes in Malaysia are recognised by the other signatory countries as having met the academic requirements for entry to the practice of engineering from the date of Malaysia's admission to full signatory status.

This opens up the opportunity for Malaysian engineers to offer their services in all signatory countries





ASEAN ENGINEERING REGISTER



International Professional
Engineer Register (IntPE)



APEC Engineer Register



GLOBALISATION: INTERNATIONAL AFFILIATIONS



**ASEAN Federation of
Engineering
Organisations
(AFEO)**



**Federation of Engineering Institutions
of Asia and the Pacific (FEIAP)**

IEM is the permanent Secretariat of **ASEAN Federation of Engineering Organisations (AFEO)** and **Federation of Engineering Institutions of Asia and the Pacific (FEIAP)** and therefore continue to create platforms for our Malaysian engineers to compete and contribute towards the economy and well being of the nation, the region and the world.

GLOBALISATION:

USA

1. The Institute of Electrical and Electronic Engineers (IEEE)
2. American Society of Civil Engineers (ASCE)

United Kingdom

1. The Institution of Electrical Engineers (IEE)
2. The Institution of Mechanical Engineers (IMechE)
3. The Institution of Civil Engineers (ICE)
4. The Institute of Marine, Science and Technology (IMarEST)
5. The Institution of Chemical Engineers (IChemE)
6. The Institution of Engineering and Technology (IET)
7. International Association for Hydro-Environment Engineering and Research (IAHR)
8. The Energy Institute (IE)

PALESTINE

Palestinian Union of Engineers (GUPE)

IRAQ

Iraqi Engineers Union (IEU)

INDIA

1. The Inst. of Engineers India (IEI)
2. Indian Institute of Engineering and Technology (IET-I)

SRI LANKA

The Inst. of Engineers Sri Lanka (IESL)

NETHERLANDS

The Royal Netherlands Society of Engineers (KIVI)

KOREA

Korea Concrete Institute (KCI)

BANGLADESH

Institution. of Engineers Bangladesh (IEB)

JAPAN

The Institute of Electrical Engineers, Japan

CHINA

China Association of Science and Technology (CAST)

CHINESE TAIPEI

Chinese Institute of Engineers (CIE)

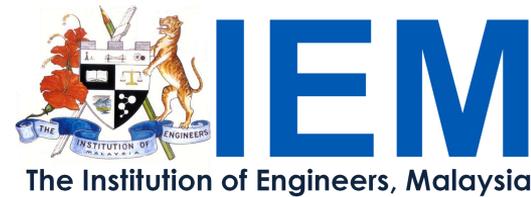
AUSTRALIA

Engineers Australia (EA)

22 MOUs SIGNED



“ In order to face the possible challenges of liberalisation, there is an urgent need to increase the performance and competitiveness of our local engineering services, especially for those who want to venture into the global market.



1

STRENGTHENING CAPACITY BUILDING PROGRAMMES



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STRENGTHENING CAPACITY BUILDING PROGRAMMES

The further strengthening of professional services is in line with the objective of the Government to develop the engineering industry

- towards more knowledge-intensive and higher-value-added sector;
- to create synergistic linkages between sectors that would further contribute to other sectors of the economy; and
- to generate high income jobs, which is linked to higher labour productivity.



Introduction Fundamentals of Engineering Examination (FEE)

Introduction of the Fundamentals of Engineering Examination (FEE) for final-year engineering students and fresh graduate engineers to ensure that the required standards pertaining to engineering fundamentals have been achieved to meet industrial demand.





Improvement of the Professional Interview (PI) Competency Examination

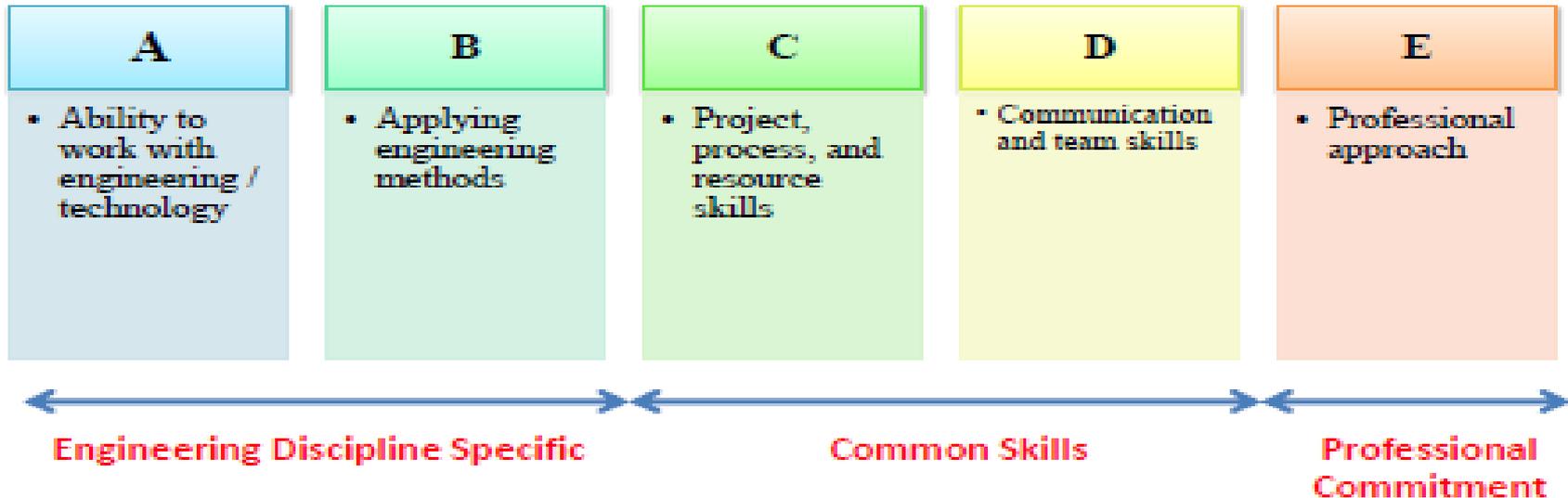


IEM is currently in the process of reviewing the Professional Interview (PI) process for further improvement, modelled upon the UK Standard for Professional Engineering Competence.

Toward this end, IEM is looking into improving the PI process by introducing the Assessment Rubrics which have threshold (scoring scales) for marking system of the PI candidate's attainment of competency.

Competency Categories

Interviewers will probe the five competency and commitment statements as follows:



Refer to IEM PI 0100 for more details.

Competency Category A

A	Use a combination of general and specialist engineering knowledge and understanding to optimise the application of existing and emerging technology.
A1	Maintain and extend a sound theoretical approach in enabling the introduction and exploitation of new and advancing technology and other relevant developments.
A2	Engage in the creative and innovative development of engineering technology and continuous improvement systems.
A3	Apply engineering knowledge related to local practices, codes, standards, specifications, materials, products, environmental plans and other requirements; and where appropriate, apply engineering knowledge contributed by others including suppliers, consultants, contractors, manufacturers, technologists, researchers and independent experts.

Competency Category B

B	Apply appropriate theoretical and practical methods to the analysis and solution of engineering problems
B1	Identify potential projects and opportunities
B2	Conduct appropriate research and undertake design and development of engineering solutions.
B3	Implement design solutions, and evaluate their effectiveness.

Note that the **design and site experience** is generally covered in Competency Category B

Competency Category C

C	Provide technical and commercial management.
C1	Plan for effective project implementation.
C2	Plan, budget, organise, direct and control tasks, people and resources.
C3	Lead teams and develop staff to meet changing technical and managerial needs.
C4	Bring about continuous improvement through quality management.

Competency Category D

D	Demonstrate effective interpersonal skills
D1	Communicate in English or Malay Language with other at all levels.
D2	Present and discuss proposals.
D3	Demonstrate personal and social skills

Competency Category E

E	Demonstrate a personal commitment to professional standards, recognizing obligations to society, the profession and the environment
E1	Comply with relevant codes of conduct.
E2	Manage and apply safe systems of work.
E3	Undertake engineering activities in a way that contributes to sustainable development.
E4	Carry out continuing professional development necessary to maintain and enhance competence in own area of practice.
E5	Understand the legal matters pertaining to engineering profession and be able to communicate with legal personnel on these issues.

Competency Objective Assessment - Rubrics

Level	Generic Statement of Attainment
1	Little or no evidence of competency
2	Some evidence of competence identified
3	Fully acceptable level of competency
4	Exceptionally strong level of competency



Training for Professional Competency Examination (PCE)

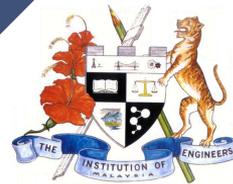


IEM will also provide the necessary training to prepare Professional Engineers who wish to go one step further by becoming Professional Engineers with Practicing Certificates (PC).

IEM through its Training Centre and Academy will have to play a greater role to prepare our engineers in terms of capacity building for all disciplines.

2

ACCREDITATION IN MALAYSIA



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Outcome-based accreditation system

- Establish the program objectives
- Develop a specification of targeted graduate outcomes, covering generic and discipline specific capabilities, knowledge, skills, attributes and values for each program under consideration.
- Undertaken in conjunction with industry stakeholders
- Drive the educational design phase
- Individual assessment tasks to systematically map against the delivery.

This then provides a fundamental reference for systematically tracking attainment of outcomes in each individual graduate.





- There must be an underlying quality cycle to ensure consistency and fairness, as well as closure of the loop on accreditation processes and practices.
- Evaluation processes must be documented and auditable.

Accreditation Process of the Engineering Programmes

Approval

- Approval to conduct a new programme shall be given by the relevant authorities. Initial evaluation by Engineering Accreditation Council (EAC) shall be forwarded to the approving authorities. Approval to conduct a programme does not guarantee full accreditation if the faculty fails to maintain the standards of the programme.

Accredited Programme

- An engineering programme acceptable for graduate registration and for professional registration with the BEM after satisfying its training requirements and for admission to membership of IEM in the grade of Graduate

Full Accreditation

- The programme that fully satisfies the minimum standard for accreditation set by EAC is for a maximum period of 5 years.

Conditional Accreditation

- Where there are minor shortcomings in meeting the accreditation requirement, the programme may be given conditional accreditation for a period of not more than 2 years during which the faculty must take necessary corrective measures, failing which the conditional accreditation will cease.

Declined Accreditation

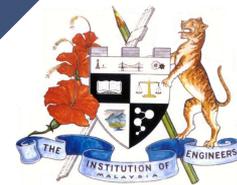
- Where there are major shortcomings in meeting the accreditation requirements, accreditation shall be declined. In such a case, a further application is not normally considered within the next two years.

Cessation/ Termination of Accreditation

- After accreditation has been given, and it is found that there is non compliance or breach of accreditation requirements, EAC reserves the right to cause to cease the accreditation.



ATTRIBUTES OF A MALAYSIAN GRADUATE ENGINEER



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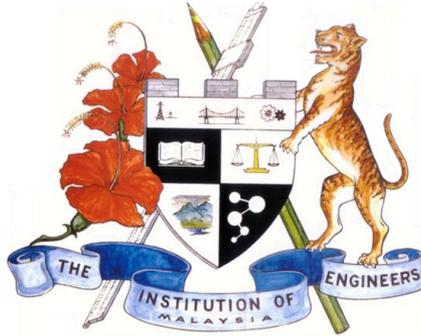
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Attributes of a Graduate Engineer



- Ability to acquire and apply knowledge
- Ability to communicate effectively
- In-depth technical competence
- Ability to undertake problem identification
- Ability to utilise a systems approach to design
- Understanding of the principles of sustainable design
- professional and ethical responsibilities
- Ability to function effectively
- Understanding responsibilities
- Undertake lifelong learning



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THANK YOU