CHOOSING THE RIGHT QUALIFICATION FOR YOUR ENGINEERING CAREER

Part 2:

Which Academic Programme?

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Applications Committee

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Venue: Zoom

Outline of Presentation

- **THE RIGHT QUALIFICATIONS FOR ENGINEERING CAREER**
- **Registration of Engineers Act**
- **Qualifications required for registered persons**
- **Entry Requirements**
- **3-year BEng/BSc Engineering Programs & BEM-GAP**

REGISTRATION OF ENGINEERS ACT, 1967 (Latest amendment 2015)

PURPOSE OF THE ACT

- To protect the public by legislative control so that the practice of engineering, which has a bearing on **public safety, health and welfare**, can only be carried out by **licensed** professional engineers.
- To create a regulatory body with mandate to carry out **licensing** of professional engineers and regulation of the profession;
- To set regulations pertaining to the practice of engineering; **qualifications for licensing; and code of professional conduct for registered engineers;**
- To maintain public confidence in the standard of services provided by **licensed professional engineers**
- To designate the Board as the authority to represent Malaysia on provision of **Engineering services under GATT's classification**

REGISTERED PERSONS

Board of Engineers Malaysia
Registered Persons

- **Graduate Engineer**
  - **Professional Engineer**
    - **Professional Engineer With Practising Certificate**
- **Engineering Technologist**
- **Inspector of Works**

Graduate Engineer

Graduate engineers are most often assigned to teams supervised by experienced **engineers**.

A graduate engineer may find employment in a variety of industries depending on their background, engineering specialty, and training. As a graduate engineer in the field of **civil engineering**, for instance, you work on scientific projects as part of a team, design civil grading, and prepare reports. In a graduate **mechanical engineering** role, you are involved in upgrade of machinery, coordinating technical project components, and participating in team meetings.

Regardless of your specialty, as a graduate engineer, you get to build work experience in lower level roles while working with veterans in your chosen field.

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BEM GRADUATE ENGINEERING BRANCHES & SUB-BRANCHES

MAIN BRANCH	CIVIL	MECHANICAL	ELECTRICAL	CHEMICAL
1	Building	Aerospace	Computer	Environmental
2	Construction	Agricultural	Electronic	Petroleum
3	Environmental	Automotive	Communication	Process (Polymer, Pharmaceutical, Food)
4	Geotechnical	Building Services		
5	Mining	Manufacturing		
6	Structural	Marine		
7	Transportation	Material		
8		Mechatronic		
9		Metallurgy		
10		Mining		
11		Naval Architecture		
12		Nuclear		

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Engineering Technologist

An engineering technologist is dedicated to the development, design, and implementation of engineering and technology. Engineering technology education is more of a broad specialized and applied engineering discipline compared to the generalized and theoretical engineering degree education. Engineering Technologists often work as entry-level engineer on projects by applying engineering principles and technical skills.

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Inspector of Works

Subsection 10E of the 2015 Amendment states that a person who holds any qualification which is recognized by the Board shall be entitled on application to be registered as an Inspector of Works. The Inspector of Works, employed to look at the interest of the client, is the person doing **standing supervision on site** to ensure that the structural, mechanical and electro-technical aspects of building constructions are carried out in accordance with plans and specifications, to the required standards.

Inspectors of works may specialize in enforcing the laws and regulations relating to design, construction and building procedures, representing building societies and other financial institutions to ensure that buildings are erected in accordance with their requirements and the mortgage agreement, ensuring compliance with specifications for construction, assembly and installation of components and products in the **construction and in manufacturing industries.**

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Level of Knowledge of Engineering Sciences for the three categories are as follows:

For Graduate Engineers	For Engineering Technologists	For Inspector of Works (IOW)
Apply knowledge of mathematics, science, engineering fundamentals and an engineering specialization to the **solution of complex engineering problems.**	Apply knowledge of mathematics, science, engineering fundamentals and an engineering specialization to **defined and applied engineering procedures, processes, systems or methodologies**.	Apply knowledge of mathematics, science, engineering fundamentals and an engineering specialization to **wide practical procedures and practices.**

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QUALIFICATIONS ACCEPTED

For Graduate Engineers:

- A **4-year engineering degree** from a Malaysian university which has been accredited by the EAC of BEM
- An accredited 4-year engineering degree from an overseas university which is a **signatory to the Washington Accord (WA).**
- BEM-Pre EAC list (including UK 3 years qualification until 2000)
- Licensed Aircraft Engineer with Category C
- Marine Engineer with CoC Class 1 (1st or Chief Engineer)

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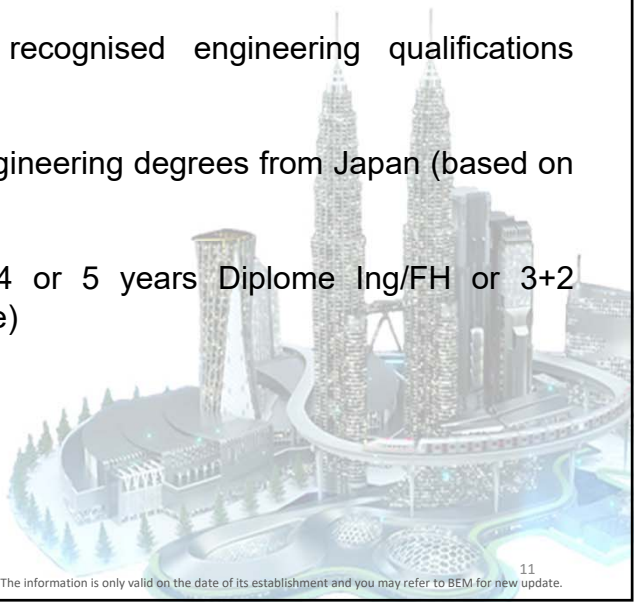
- 4 years or more JPA-BEM's recognised engineering qualifications (Russia/France CTI)
- 4 years Monbusho recognised engineering degrees from Japan (based on intake until June 2009)
- FEANI Index or list (EEED) (4 or 5 years Diplome Ing/FH or 3+2 qualifications in a related discipline)



WASHINGTON ACCORD (WA) SIGNATORIES

Qualifications accredited or recognized by other signatories are recognised by each signatory as being substantially equivalent to accredited or recognised qualifications within its own jurisdiction.

- **Korea** - Represented by Accreditation Board for Engineering Education of Korea (ABEEK) (2007)
- **Russia** - Represented by Association for Engineering Education of Russia (AEER) (2012)
- **Malaysia** - Represented by Board of Engineers Malaysia (BEM) (2009)
- **China** - Represented by China Association for Science and Technology (CAST) (2016)
- **South Africa** - Represented by Engineering Council South Africa (ECSA) (1999)
- **New Zealand** - Represented by Engineering New Zealand (EngNZ) (1989)
- **Australia** - Represented by Engineers Australia (EA) (1989)
- **Canada** - Represented by Engineers Canada (EC) (1989)
- **Ireland** - Represented by Engineers Ireland (EI) (1989)

- **Hong Kong China** - Represented by The Hong Kong Institution of Engineers (HKIE) (1995)
- **Chinese Taipei** - Represented by Institute of Engineering Education Taiwan (IEET) (2007)
- **Singapore** - Represented by Institution of Engineers Singapore (IES) (2006)
- **Sri Lanka** - Represented by Institution of Engineers Sri Lanka (IESL) (2014)
- **Japan** - Represented by JABEE (2005)
- **India** - Represented by National Board of Accreditation (NBA) (2014)
- **United States** - Represented by Accreditation Board for Engineering and Technology (ABET) (1989)
- **Turkey** - Represented by Association for Evaluation and Accreditation of Engineering Programs (MÜDEK) (2011)
- **United Kingdom** - Represented by Engineering Council United Kingdom (ECUK) (1989)
- **Costa Rica** - Represented by Colegio Federado de Ingenieros y de Arquitectos de Costa Rica (CFIA) (2020)
- **Pakistan** - Represented by Pakistan Engineering Council (PEC) (2017)
- **Peru** - Represented by Instituto de Calidad y Acreditacion de Programas de Computacion, Ingenieria y Tecnologia (ICACIT) (2018)
- **Indonesia** - Represented by Persatuan Insinyur Indonesia (PII) (2022)

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Provisional Signatories – developing towards becoming a full signatory

- Chile
- Thailand
- Bangladesh
- Philippines
- Myanmar
- Saudi Arabia

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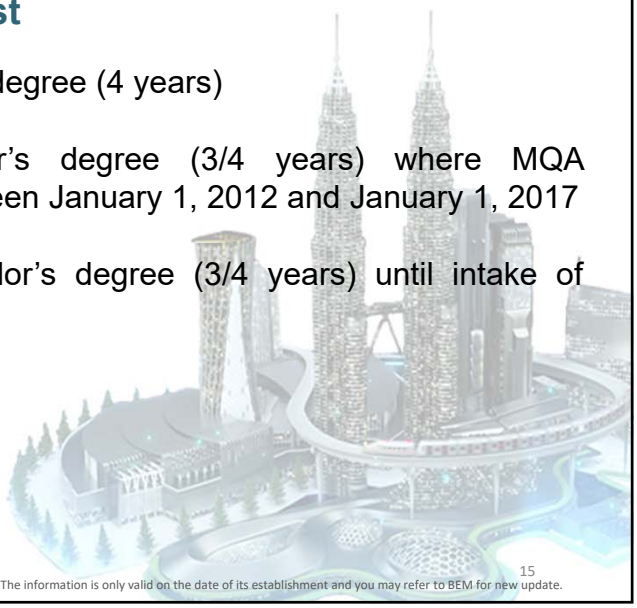
For Engineering Technologist

- ETAC accredited ET Bachelor's degree (4 years)
- MQA accredited ET Bachelor's degree (3/4 years) where MQA accreditation was awarded between January 1, 2012 and January 1, 2017
- MQA accredited E/T/AS Bachelor's degree (3/4 years) until intake of January 1, 2017



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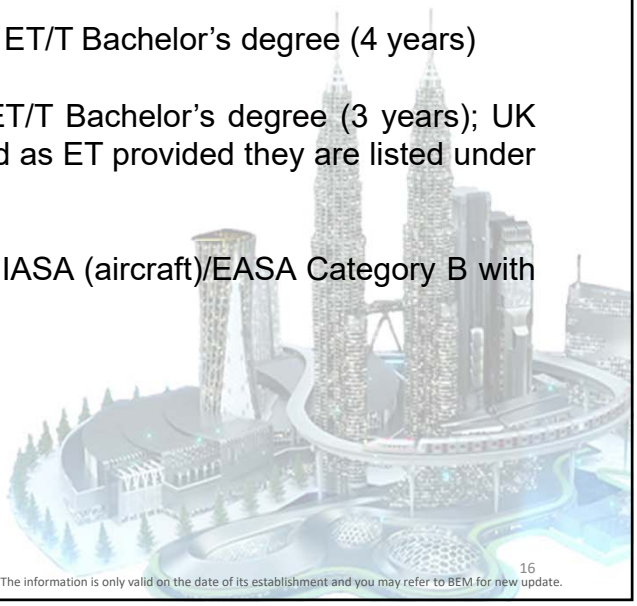
- **Sydney Accord (SA) signatories** ET/T Bachelor's degree (4 years)
- Sydney Accord (SA) signatories ET/T Bachelor's degree (3 years); UK 3-years program may be registered as ET provided they are listed under CEng; IEng
- International accrediting body like IASA (aircraft)/EASA Category B with type rated
- Marine CoC Class 2



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SYDNEY ACCORD (SA) SIGNATORIES

Qualifications accredited or recognized by other signatories are recognised by each signatory as being substantially equivalent to accredited or recognised qualifications within its own jurisdiction.

- **Australia** - Represented by Engineers Australia (EA) (2001)
- **Canada** - Represented by Canadian Council of Technicians and Technologists (CCTT) (2001)
- **Chinese Taipei** - Represented by Institute of Engineering Education Taiwan (IEET) (2014)
- **Hong Kong China** - Represented by The Hong Kong Institution of Engineers (HKIE) (2001)
- **Ireland** - Represented by Engineers Ireland (EI) (2001)
- **Korea** - Represented by Accreditation Board for Engineering Education of Korea (ABEEK) (2013)
- **South Africa** - Represented by Engineering Council South Africa (ECSA) (2001)
- **United Kingdom** - Represented by Engineering Council United Kingdom (ECUK) (2001)
- **United States** - Represented by Accreditation Board for Engineering and Technology (ABET) (2009)
- **Malaysia** - Represented by Board of Engineers Malaysia (BEM) (2018)
- **New Zealand** - Represented by Engineering New Zealand (EngNZ) (2001)

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For Inspector of Works (IOW)

- Diploma in Engineering accredited by BEM's Engineering Accreditation Council (ETAC)
- Diploma in Engineering accredited by MQA (before December 31, 2018)
- Diploma in Engineering accredited by professional body who are signatory of **Dublin Accord (DA)**
- CAAM/DCAM Aircraft Maintenance License – Type Category B (without type rating)
- Certificate of Competency as Marine Engineer – Third/Fourth (Junior Marine Engineer) – or Holder of Fourth Class Certificate of Competency as Marine Engineer

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DUBLIN ACCORD (DA) SIGNATORIES

Qualifications accredited or recognized by other signatories are recognised by each signatory as being substantially equivalent to accredited or recognised qualifications within its own jurisdiction.

- **Australia** - Represented by Engineers Australia (EA) (2013)
- **Canada** - Represented by Canadian Council of Technicians and Technologists (CCTT) (2002)
- **Ireland** - Represented by Engineers Ireland (EI) (2002)
- **New Zealand** - Represented by Engineering New Zealand (EngNZ) (2013)
- **Korea** - Represented by Accreditation Board for Engineering Education of Korea (ABEEK) (2013)
- **South Africa** - Represented by Engineering Council South Africa (ECSA) (2002)
- **United Kingdom** - Represented by Engineering Council United Kingdom (ECUK) (2002)
- **United States** - Represented by Accreditation Board for Engineering and Technology (ABET) (2013)
- **Malaysia** - Represented by Board of Engineers Malaysia (BEM) (2018)

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ENTRY QUALIFICATIONS

For 4-year BEng degree (EAC accredited)

To pursue a Degree in Engineering, you need to complete a pre-university programme and meet the entry requirements.

- **STPM:** Minimum 2Cs including Mathematics and Physics **OR**
- **Foundation in Science or Engineering**: Minimum CGPA of 2.00
- **Matriculation:** Minimum CGPA of 2.00
- **Diploma in Engineering** with minimum CGPA 2.0

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For 4-year BEngTech degree (ETAC accredited)

- **STPM:** or equivalent with minimum Grade C (CGPA 2.0) in Mathematics and ONE (1) relevant science subject **OR**
- **Diploma:** in Engineering or Engineering Technology or equivalent with minimum CGPA 2.0 OR
- **Technical/Vocational/Skills Diploma:** with minimum CGPA 2.0

For Diploma in Engineering

- **SPM:** 3C (incl. Math, one Science subject & a pass in English)

3-YEAR BEng or BSc ENGINEERING PROGRAMMES

- BEM does not recognize the 3-year engineering programme.
- Hence accreditation by EAC is not carried out

- ***Up to now, BEM has been accepting the 3-year engineering degree topped up by a Master's in the same field as the basic degree, The combined curricula of both Bachelors AND Masters programmes must fulfil the required core courses requirements for that branch of engineering, and these are evaluated on case to case basis.***

- **Topping-up by Master's for the local 3-year BEng degrees are not accepted from 1st January, 2022**

BEM-GRADUATE ASSESSMENT PROGRAM (BEM-GAP)

The Board of Engineers Malaysia (BEM) has introduced a 2-year top-up programme called BEM-Graduate Assessment Program (BEM-GAP). The programme can be used as a pathway for the following purposes:

1) Registration as a Graduate Engineer

This is applicable to engineering Graduates as follows:

(a) **Local 3-year Bachelor of Engineering Degree** accredited by Malaysian Qualifications Agency (MQA)

(b) **First Cycle (Bachelor degrees) listed in FEANI** (European Engineering Education Database - EEED) database with EUR-ACE label

(c) **3-year UK Bachelor of Engineering** accredited by Engineering Council, UK (requiring Further Learning for CEng application purpose)

2) 4-year BEng degrees from non-WA signatories

Degree holders of 4-year engineering programmes from non-WA signatories may sit for the BEM-GAP to satisfy the GE registration requirements.

3) Conversion of Engineering Technologists to Graduate Engineers

For those who are interested to choose Engineering as a career.
Please choose engineering degree programmes that are accredited by BEM.
Visit the engineering/engineering technology accredited website for details:

Accredited Engineering Degree Programme:
http://www.eac.org.my/web/list_accredited.html

Accredited Engineering Technology Degree Programme
http://etac.org.my/list-accreditation-for-bachelor/

Accredited Engineering Technology Diploma Programme
http://etac.org.my/list-acreditation-for-diploma/

LIST OF ABBREVIATIONS

BEM – Board of Engineers Malaysia
CAAM – Civil Aviation Authority of Malaysia
CEng – Chartered Engineer
CGPA – Cumulative Grade Point Average
CoC – Certificate of Competency
CTI – French Engineering Degree Commission
DA – Dublin Accord
DCAM – Department of Civil Aviation Malaysia
EAC – Engineering Accreditation Council
EASA – Certification of Aircraft in the EU
EEED – European Engineering Education Database
ETAC – Engineering Technology Accreditation Council
ET – Engineering Technology/Technologist
FEANI – Federation of Professional Engineers (Europe)
FH – Fachhochschule (German Tertiary Education Institution)
GAP – BEM Graduate Assessment Program
GATT – General Agreement on Trades and Tariff
IASA – International Aviation Safety Assessment
IEng – Incorporated Engineer
FEANI – Federation of Professional Engineers (Europe)
FH – Fachhochschule (German Tertiary Education Institution)
MQA – Malaysian Qualifications Agency
JPA – Jabatan Perkhidmatan Awam (Public Service Department)
SA – Sydney Accord (for technologists)
SPM – Sijil Pelajaran Malaysia (Malaysian Certificate of Education)
STPM – Sijil Tinggi Persekolahan Malaysia (Malaysian Higher School Certificate)
WA- Washington Accord

THANK YOU

"Committed To Engineering Excellence"

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