



Part II (1) : Introduction to Engineering Educational Accords and Agreements of International Engineering Alliance

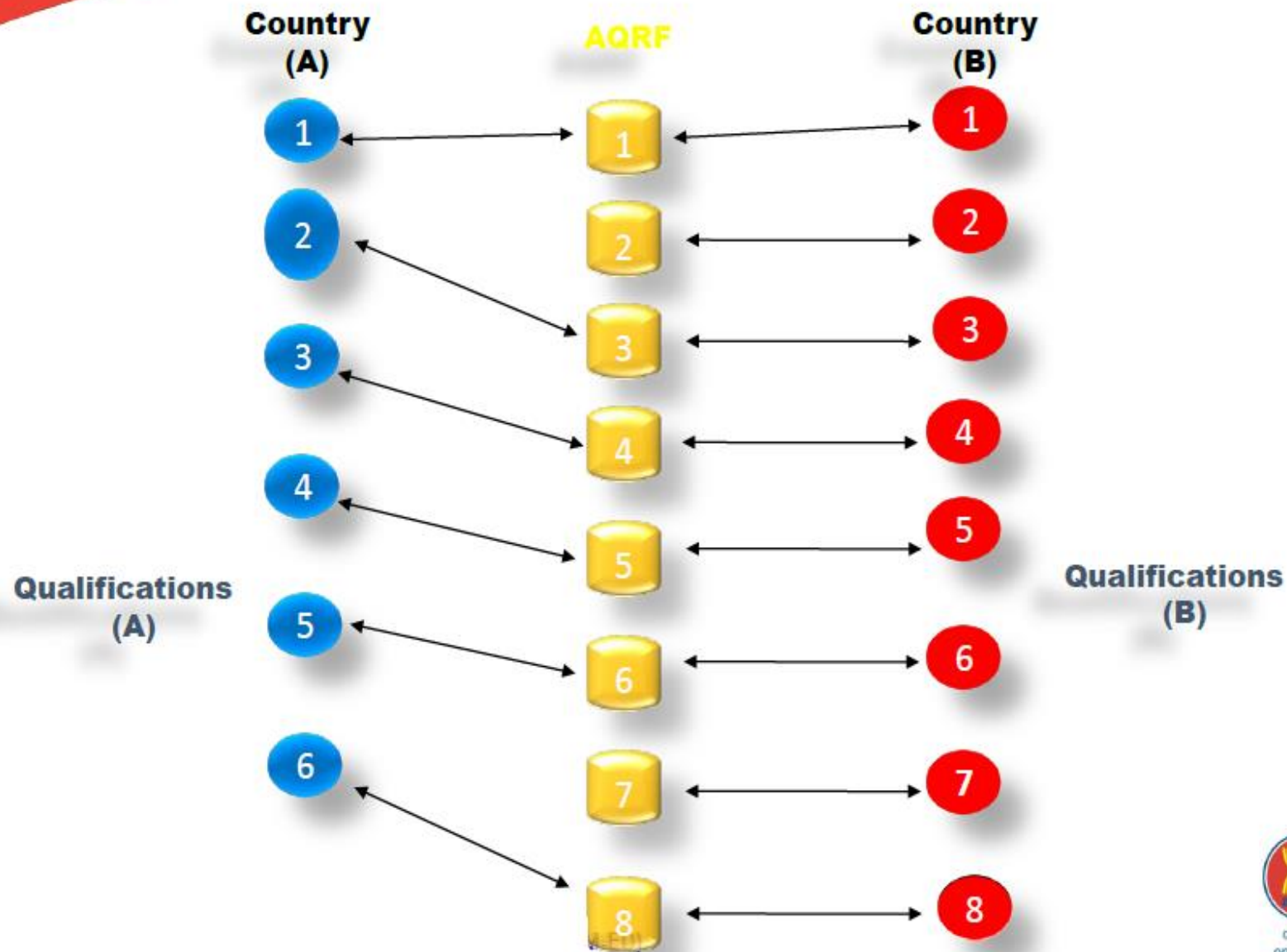
Prof. Dr. Zaw Min Aung
Chair

Engineering Education Accreditation Committee (EEAC)
WFEO - Committee on Education in Engineering (CEIE)

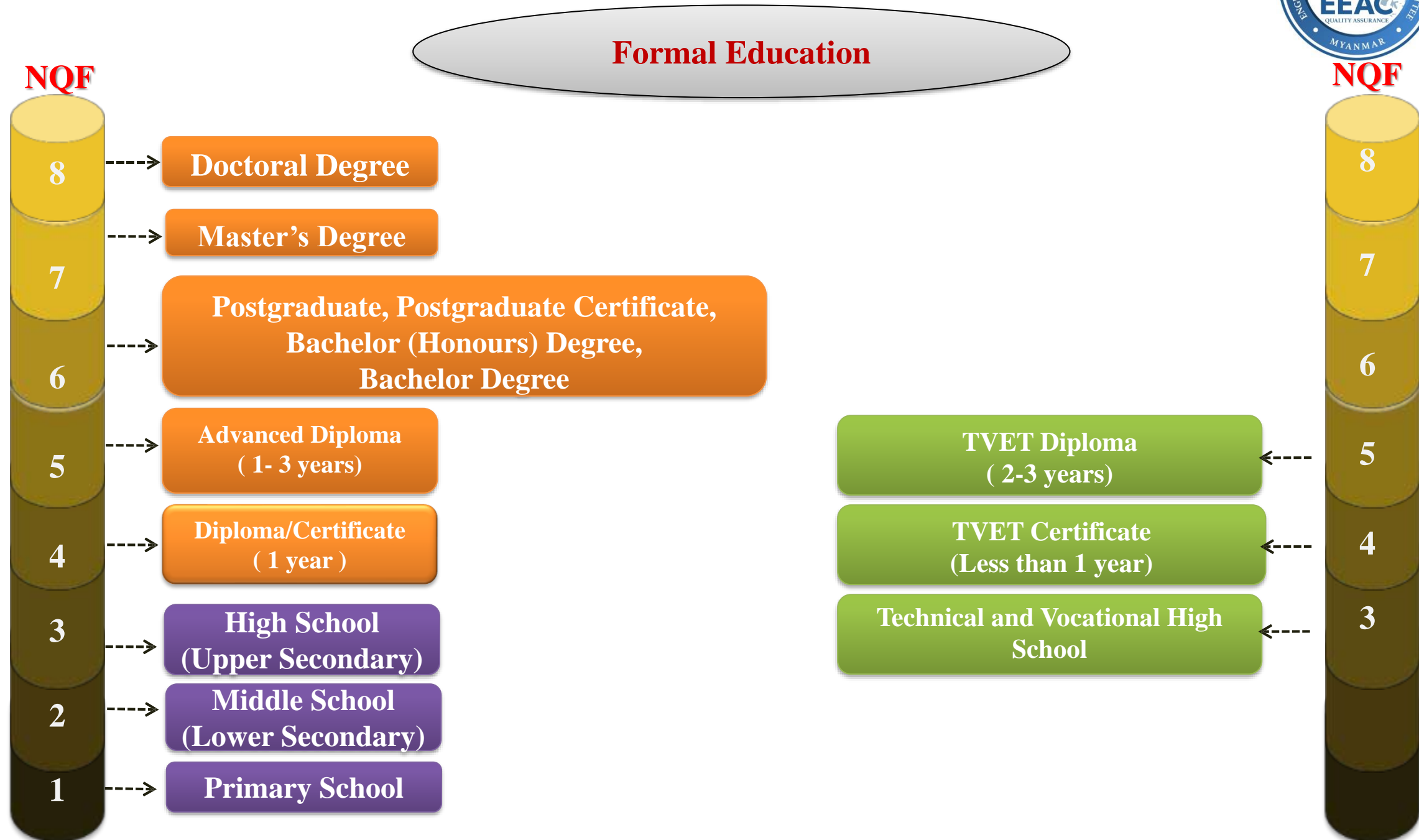
ASEAN Qualification Framework (AQF)

National Qualification Framework (NQF)

ASEAN Qualification Framework (AQF) & National Qualification Framework (NQF)



National Qualification Framework (NQF)



Linkage of GCE Advanced Level and Engineering Degrees

Linkage of GCE A Level and Engineering Degrees

Sample: Nanyang Technological University, Singapore



[Home](#) > [Admissions](#) > [Undergraduate](#) > [Admission Guide](#) > [International Qualifications](#)

NUS High School Diploma

International Qualifications

Adult Learners Scheme

Aptitude-Based Admissions

Transfer Applicants

IMPORTANT INFORMATION FOR APPLICANTS

New Closing Application Deadlines for International & Other qualifications for Academic year 2023. Below is a summary table for the affected qualifications.

International & other Qualification	Application period
American High School Diploma IB diploma(IBO), Spanish/European Baccalaureate Hong Kong DSE Indian Standard 12 Malaysian STPM, Malaysian UEC Mauritius HSC Sri Lanka A Level Certificate UK A Level, A-Level (Brunei / Hong Kong)	31 October 2022 to 21 February 2023

Schooling Year

Sample: Nanyang Technological University, Singapore



Courses	Degrees	Duration of Study
<u>Accountancy</u>	B.Acc.	3 years
<u>Business</u>	B.Bus.	3 years
<u>Computer Engineering</u>	B.Eng.(Comp.Eng.)	4 years
<u>Materials Engineering</u>	B.Eng.(Matl.Eng.)	4 years
<u>Engineering</u> <u>- Civil & Environmental</u> <u>- Electrical & Electronic</u> <u>- Mechanical & Production</u>	B.Eng.	4 years
<u>Biological Sciences</u>	B.Sc.(Hons)	4 years
<u>Communication Studies</u>	B.Comm.Studies (Hons.)	4 years
<u>Arts (Education)</u>	B.A.(Ed.)	4 years
<u>Science (Education)</u>	B.Sc.(Ed.)	4 years

Comparison Between GCE O and A Level in terms of the Contents (Mathematics)



Mathematics		Level			
Algebra	GCE O Level		GCE A Level		
	Subject content	Notes/Example	Subject content	Notes/Example	
	<ul style="list-style-type: none">• Use brackets and extract common factors.• Expands products of algebraic expansions	<ul style="list-style-type: none">• Factorize $9x^2 + 15xy$• Expand $3x(2x - 4y)$, $(x + 4)(x - 7)$	<ul style="list-style-type: none">• Understand the meaning of x, sketch the graph of $y = ax + b$ and use relations such as $a = b \Leftrightarrow a^2 = b^2$ and $x - a < b \Leftrightarrow a - b < x < a + b$ when solving equations and inequalities.	<ul style="list-style-type: none">• Graphs of $y = f(x)$ and $y = f(x)$ for non-linear functions f are not included. e.g. $3x - 2 = 2x + 7$, $2x + 5 < x + 1$	
	<ul style="list-style-type: none">• Construct and transform formulae and equations.	<ul style="list-style-type: none">• Transform formulae where the subject appears twice or where a power of the subject appears.	<ul style="list-style-type: none">• Use the factor theorem and the remainder theorem.	<p>To find factors and remainders, solve polynomial equations or evaluate unknown coefficients. Including factors of the form $(ax + b)$ in which the coefficient of x is not unity, and including calculation of remainders.</p>	

Comparison Between GCE O and A Level in terms of the Contents (Physics)



<u>Physics</u>	Subject Contents	Learning Outcomes
GCE Ordinary Level Physics	<p>Chapter 2 – Kinematics</p> <p>2.1 Speed, velocity and acceleration</p> <p>2.2 Graphical analysis of motion</p> <p>2.3 Free-fall</p>	<p>Candidates should be able to:</p> <p>(a) state what is meant by speed and velocity.</p> <p>(b) recall and use average speed = distance travelled/time taken.</p> <p>(c) state what is meant by uniform acceleration and recall and use acceleration = change in velocity/time taken.</p> <p>(d) ...</p>
GCE Advanced Level Physics	<p>Chapter 2 – Kinematics</p> <p>2.1 Equations of motion</p>	<p>Candidates should be able to:</p> <p>(a) define and use distance, displacement, speed, velocity and acceleration</p> <p>(b) use graphical methods to represent distance, displacement, speed, velocity and acceleration</p> <p>(c) determine displacement from the area under a velocity–time graph</p> <p>(d) ...</p>

Why is Accreditation?

i. Global Mobility of Engineers

ii. Based on Substantial Equivalence with the Programme Accreditation

iii. Goals Diagram as the Accreditation at the ASIA Pacific Level and International Level

Global Mobility of Engineers



- Movement of Globally Engineering Professionals who are capable of Independent Practices
- Examples of Understanding/Agreements for Mobility of Engineering Professionals:
 - ❖ ASEAN Chartered Professional Engineers Register
 - ❖ International Professional Engineers Agreement (formerly EMF)
 - ❖ APEC Engineers Register

Why is Accreditation?

How do I become a engineer? (USA)



Step 1: Graduation

- The first step is graduating from an **ABET-accredited engineering program at a college or university.**

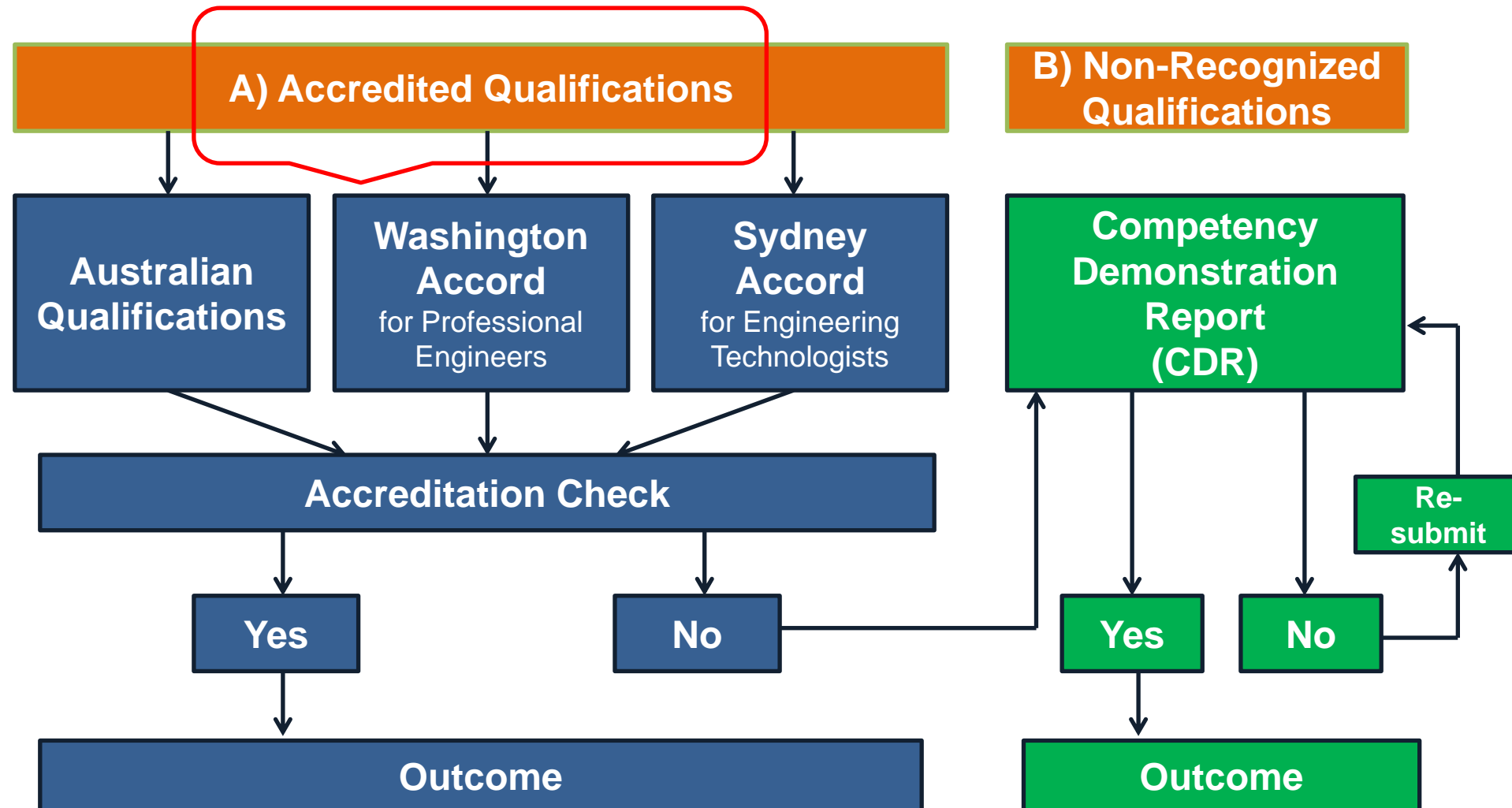
Step 2: Fundamentals of Engineering (FE) Exam

Step 3: Work Experience

Step 4: Principles and Practice of Engineering (PE) Exam

Reference on IEET

Pathways to Recognition (Australia)



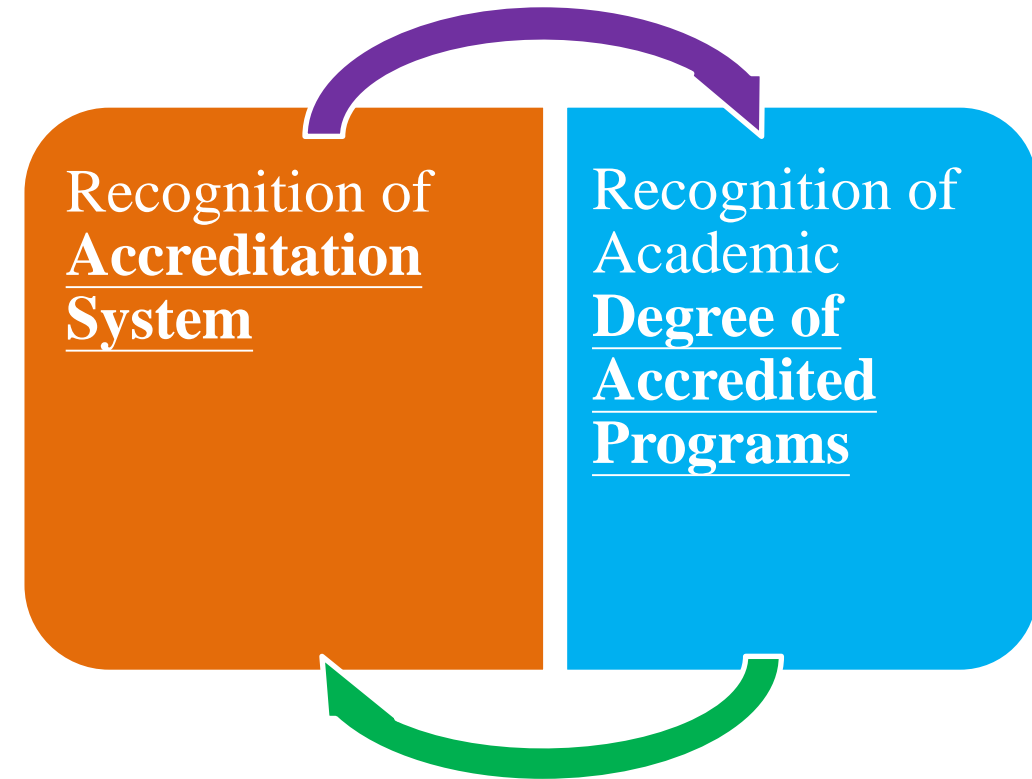
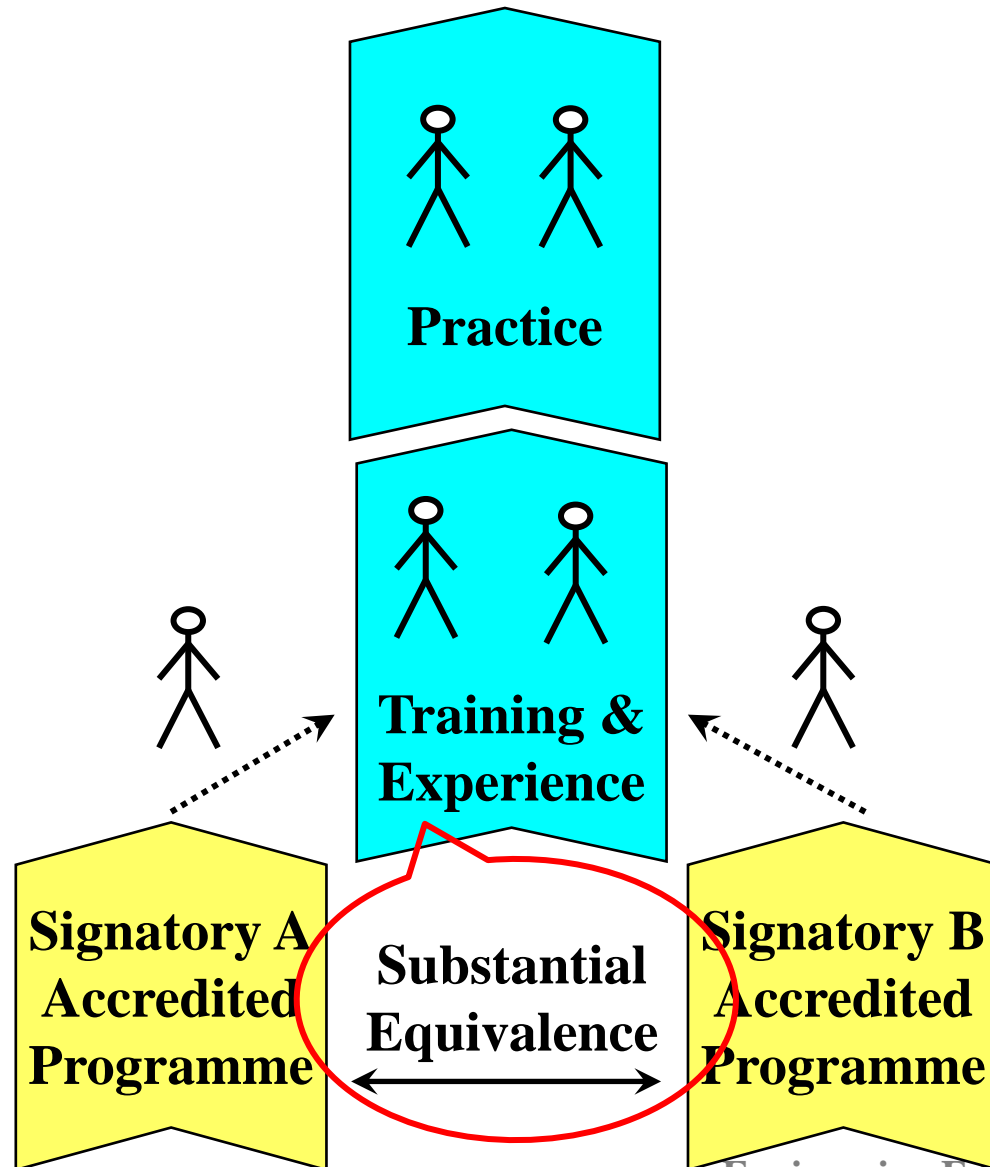
Reference on IEET

For Mobility, We need Mutual Recognition and thus Accreditation



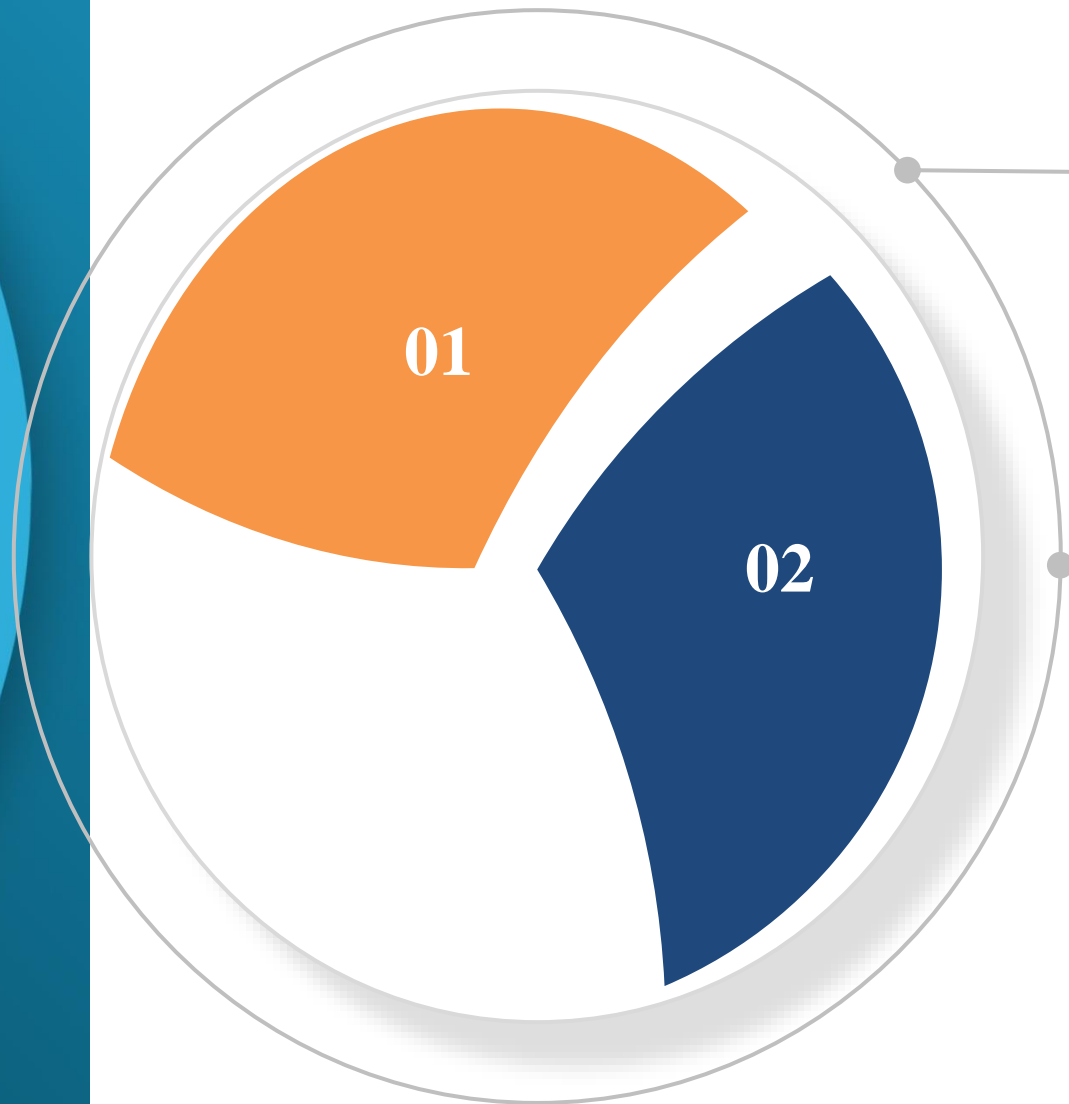
- International Benchmarking and External Recognition of Quality
- For Further Improvement by Faculty, Give Assurance and Confidence to:
 - Prospective students
 - Graduates
 - Prospective employers
 - Graduate schools
 - Licensing agencies
 - Governments

Based on Substantial Equivalence Mutual Recognition is Achieved



Reference on IEET

Goals Diagram as the Accreditation at the ASIA Pacific Level and International Level



**Mobility of engineering services
in Asia Pacific & International
as Professional Engineer**



**Accredited Degree complied
with ASEAN MRA/
Substantial Equivalence in
Engineering Education**

International Recognition of Engineering Degrees on Programmes Accreditation

- (i) International Engineering Alliance**
- (ii) Europe**
- (iii) Asia**

International Engineering Agreements on Programmes Accreditation



International

**Washington
Accord**

Sydney Accord

Dublin Accord

Seoul Accord

Europe

**ENAAEE
(EUR-ACE)**

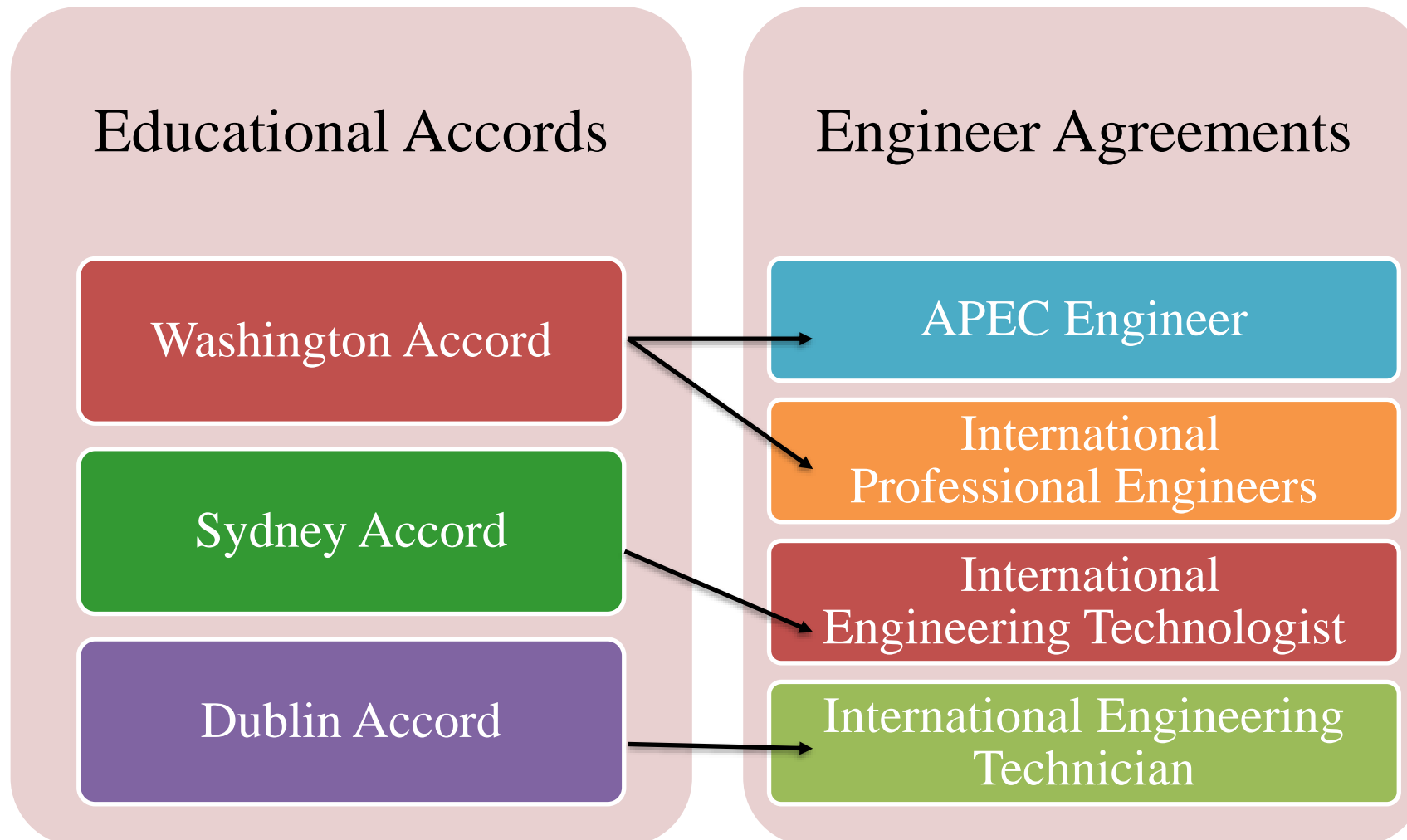
Asia Pacific

FEIAP

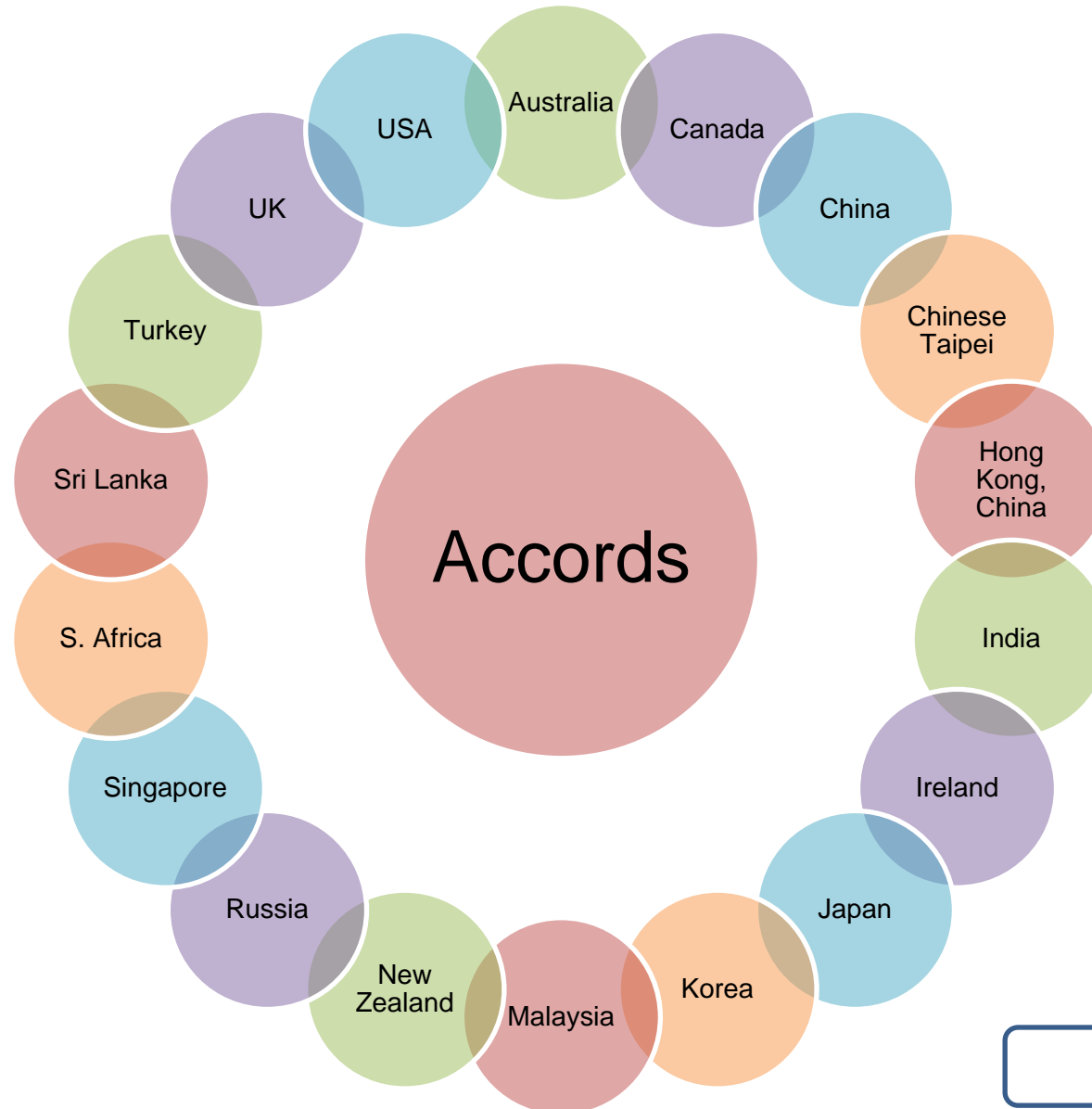
International Engineering Alliance (IEA)



mutual recognition of engineering qualifications and professional competence



Educational Accords Aims at Mutual Recognition



- Criteria, policies and procedures are verified comparable
- Accreditation decisions acceptable to other signatories

Reference on IEET

International Recognition of Engineering Degrees on Programmes Accreditation

IEA - Graduate Attributes (GAs)

	WA Graduate (Professional)	SA Graduate (Technologist)	DA Graduate (Technician)
1. Engineering Knowledge			
2. Problem Analysis	Complex	Broadly defined	Well defined
3. Design/development of solutions	Complex	Broadly defined	Well defined
4. Investigation	Complex	Broadly defined	Well defined
5. Tool Usage	Complex	Broadly defined	Well defined
6. The Engineer and the World			
7. Ethics			
8. Individual and Collaborative Team work			
9. Communication	Complex	Broadly defined	Well defined
10. Project Management and Finance			
11. Life long learning			

IEA - Professional Competency

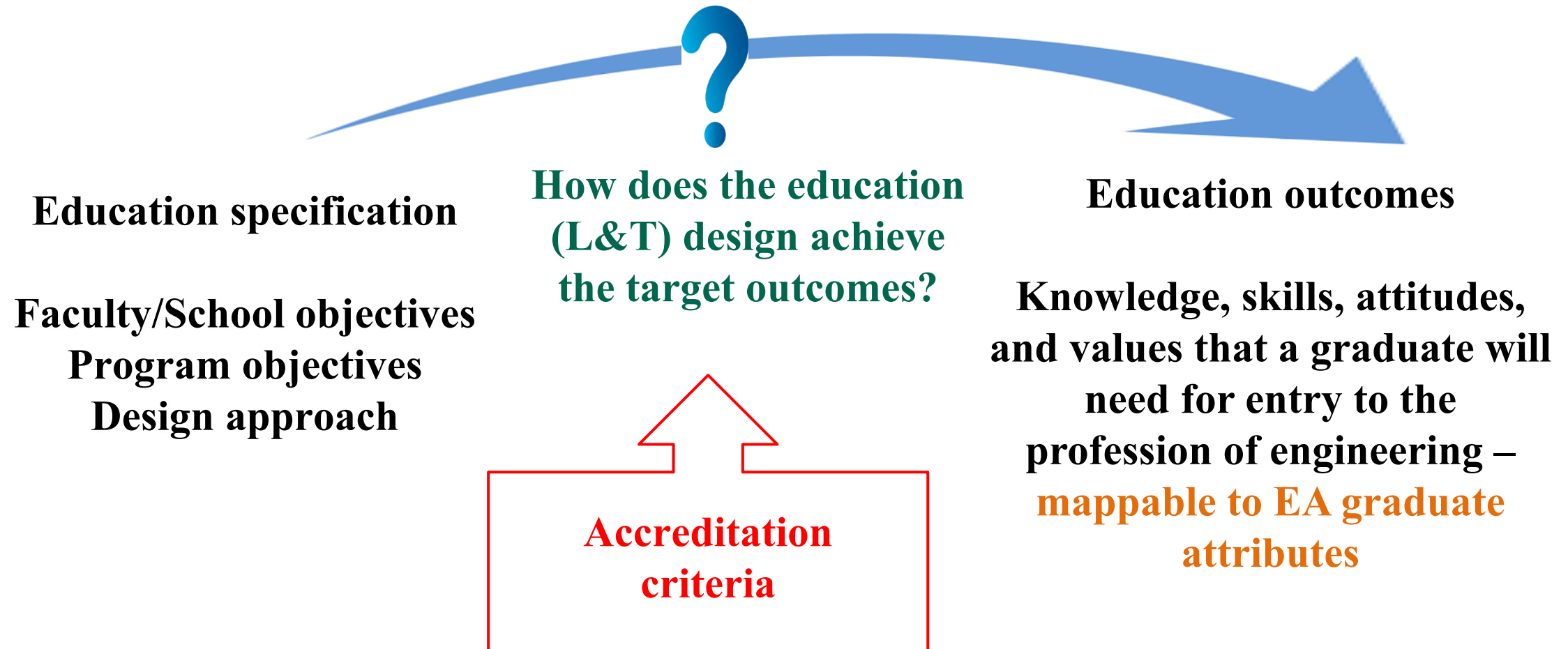
Element	Professional Engineer	Engineering Technologist	Engineering Technician
1. Comprehend and apply universal knowledge	advanced	widely accepted applied	standardised
2. Comprehend and apply local knowledge	advanced	widely accepted applied	standardised
3. Problem analysis	complex	broadly-defined	well-defined
4. Design and development of solutions	complex	broadly- defined	well- defined
5. Evaluation	complex	broadly defined	well-defined
6. Protection of society	complex	broadly-defined	well-defined
7. Legal and regulatory	=	=	=
8. Ethics	=	=	=
9. Manage engineering activities	complex activities	broadly- defined	well- defined
10. Communication	=	=	=
11. Lifelong learning	=	=	=
12. Judgment	complex	broadly defined	well-defined
13. Responsibility for decisions	complex	broadly defined	well- defined

Accreditation relates professional practice to the L & T function



Reference on Dr. Lincoln Wood, Engineers Australia

From specification to outcomes



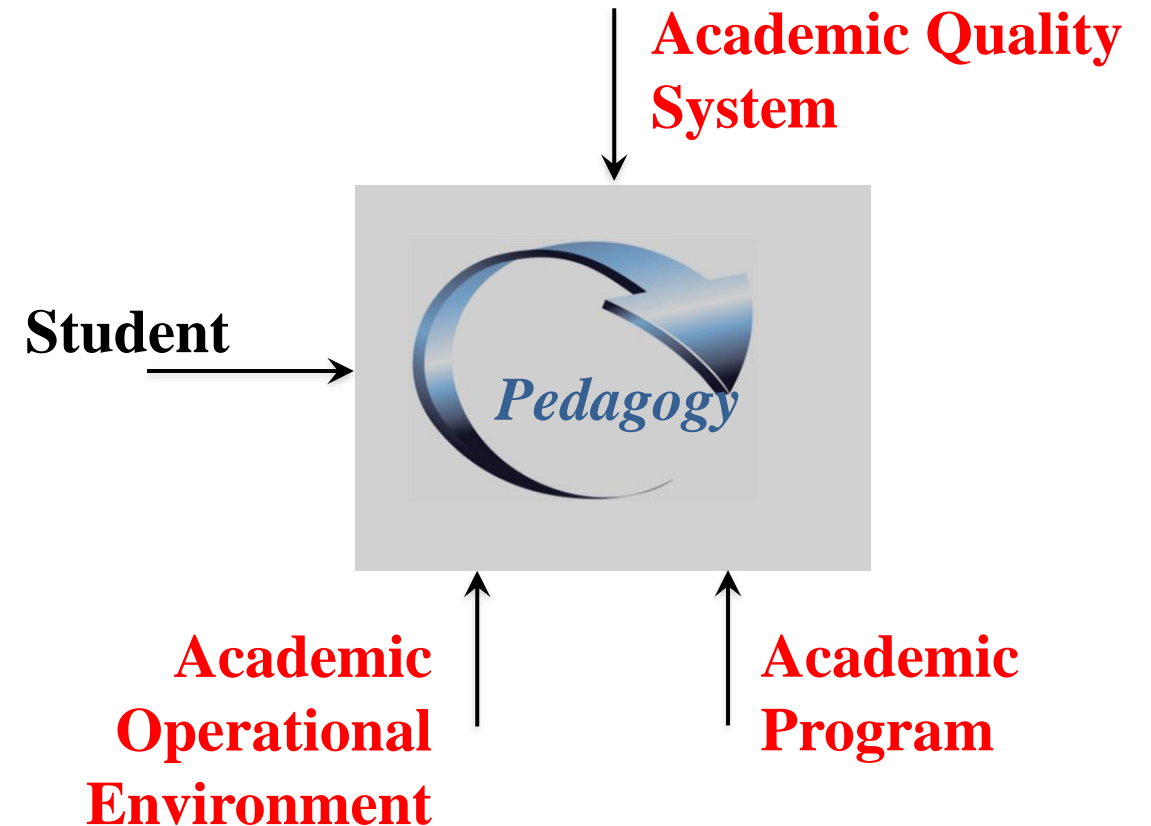
Reference on Dr. Lincoln Wood, Engineers Australia

EA - Accreditation Criteria

The accreditation criteria comprise the three primary influences on the pedagogy function:

- *Academic Program*
- *Academic Operational Environment*
- *Academic Quality System*

The EA Stage 1 Competency Standards are embedded in the Academic Program group of criteria

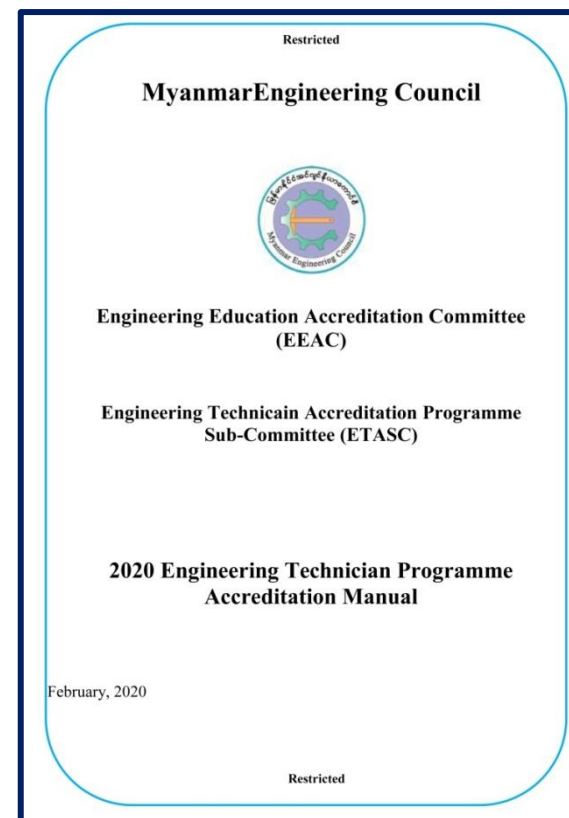
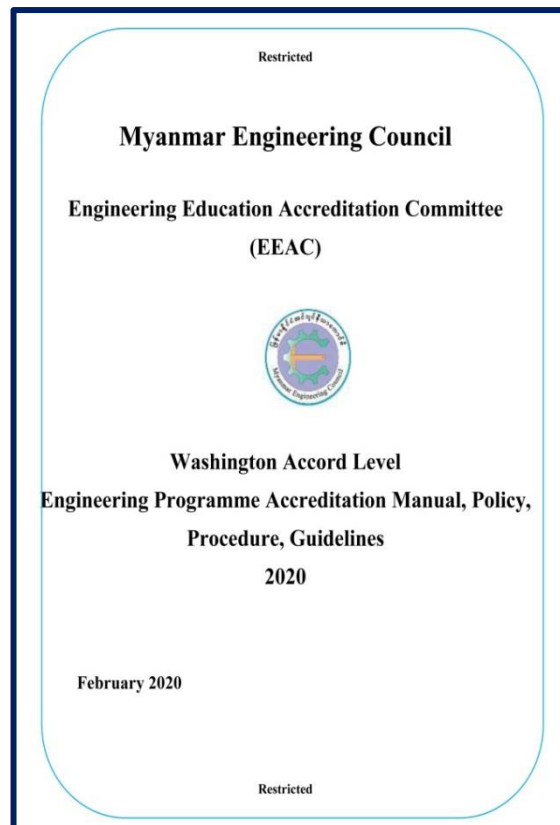
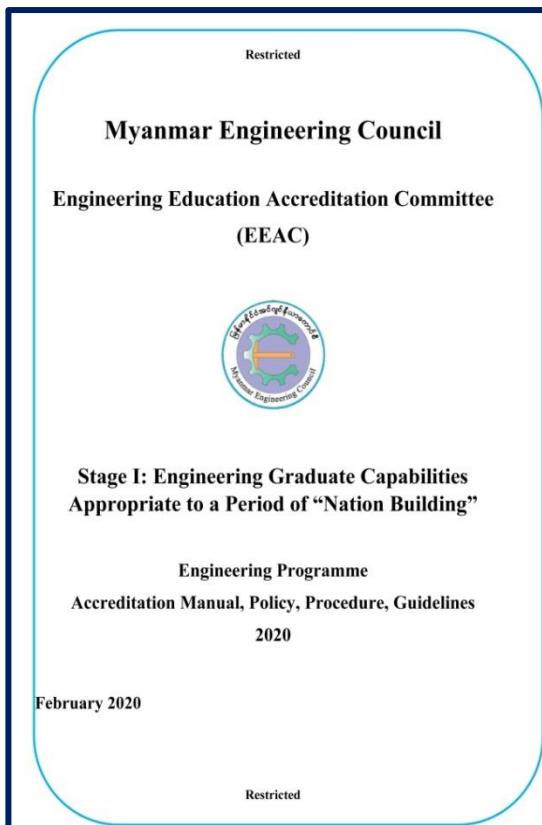


Reference on Dr. Lincoln Wood, Engineers Australia



EEAC/ CEIE Accreditation that Focuses on Outcome-Based Education

EEAC Accreditation Manuals



EEAC – Accredited Engineering Programmes



EEAC had visited to programmes by *Trained Programmes Evaluators & Reviewed by Invited Observers from FEIAP*;

☼ 2015 – 2024	Full Accredited Programme (3TUs)	- 25 Programmes
	Provisional Accredited Programme (9TUs)	- 53 Programmes
	Interim Programmes (2TUs)	- 18 Programmes
☼ 2015 – 2024	Technician Programmes (2GTIs)	- 4 Programmes

WASHINGTON ACCORD

ACKNOWLEDGEMENT OF SIGNATORY & PROVISIONAL STATUS

WE ARE PROUD TO RECOGNISE THESE ORGANISATIONS FOR THEIR RECENT ACHIEVEMENTS. IT IS OUR PRIVILEGE TO WORK ALONGSIDE THEM TO STRENGTHEN ENGINEERING EDUCATION GLOBALLY.

These organisations have either recently joined the IEA Educational Accords by becoming a provisional signatory or they have been recognised as having achieved status as a full signatory.

This represents a significant achievement, on their part, and we celebrate the fact that we are working together to establish and benchmark the standards for engineering education internationally.

2019

Admission of Provisional Signatories

Washington Accord

At its meeting on 12 June 2019 in Hong Kong, the Washington Accord admitted the following organisations, as representing their jurisdictions, as provisional signatories to the Washington Accord:

Myanmar (MEC)

Indonesia (PII/IABEE)

Thailand (COE/TABEE)



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

Certificate

Certification on FEIAP Engineering Education Guidelines Compliance

The Accreditation System for engineering programmes in Myanmar implemented by

Myanmar Engineering Council

has been considered as in compliance with the standards and best practices established
in FEIAP Engineering Education Guidelines.

given on 30 June 2019 in Xian, China.

Ir. Dr. Tan Yean Chin
Secretary-General

Dr. John Chien-Chung Li
President

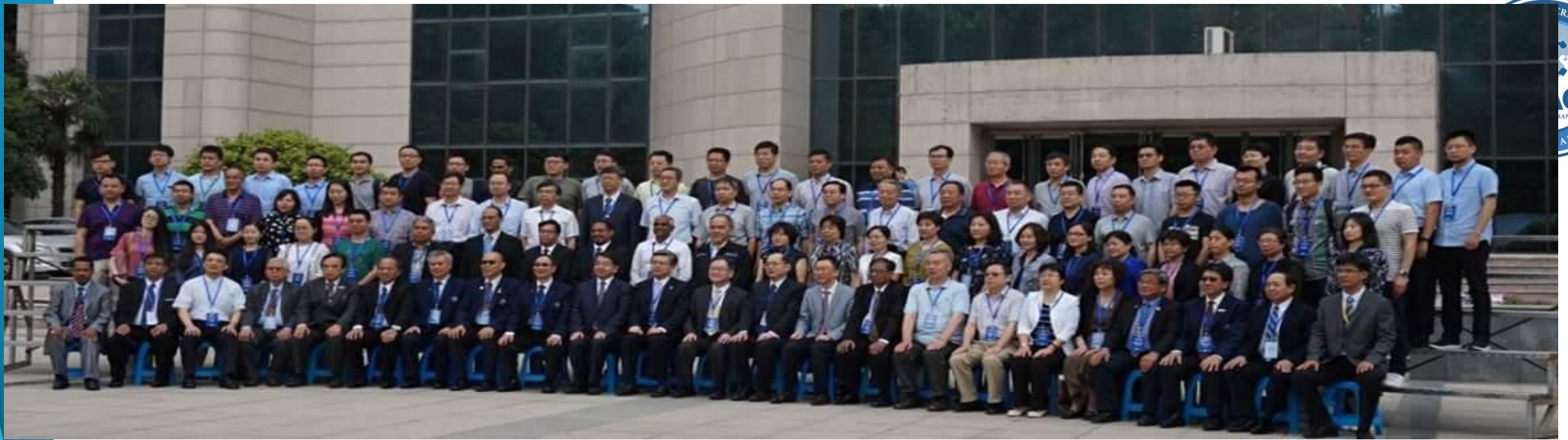
Dato' Ir. Prof. Dr. Chuah Hean Teik
Chairman Standing Committee on
Engineering Education



**Certification on FEIAP
Engineering Education
Guidelines Compliance**

FEIAP Meeting at China

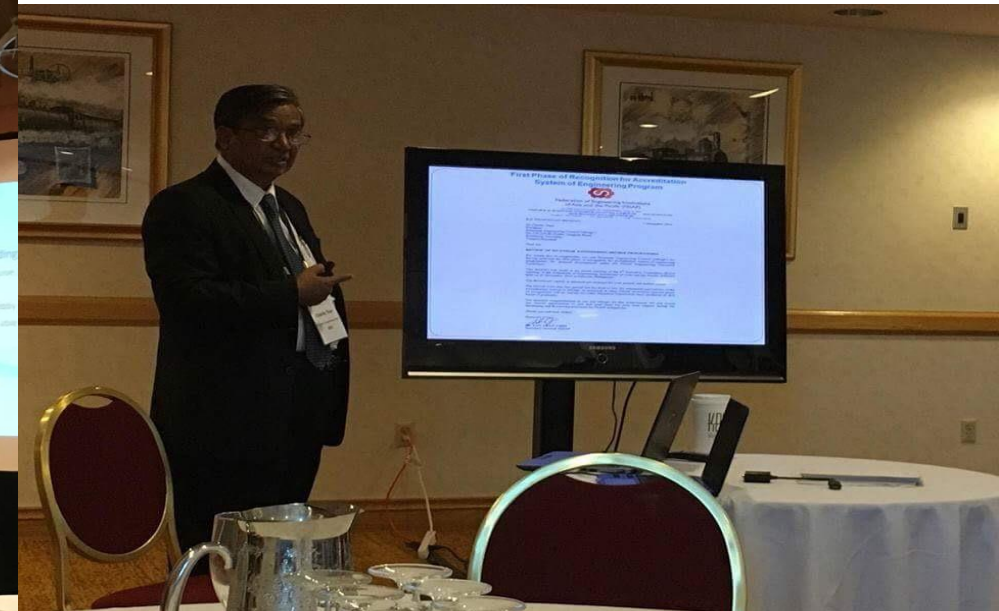
28~30 June 2019



FEIAP 1st Engineering Education Workshop (Xi'an)

(17.5.2018 to 18.5.2018)

IEAM 2017, Anchorage, Alaska 18-23 June 2017



6th FEIAP Convention & 30th General Assembly 2022





Engineering Education Accreditation Committee (EEAC)



World Federation of Engineering Organizations (WFEO) Committee on Education in Engineering (CEIE)



The aim of the Education in Engineering Standing Technical Committee (CEIE) is to work for the development of the profession and the review of the engineering programs through collaboration with different educational establishments and organizations

WFEO-CEIE



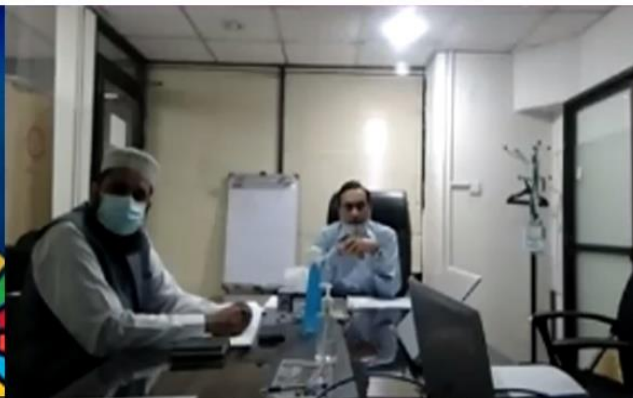
The [Myanmar Engineering Council \(MEngC\)](#) serves as host of the **Committee on Engineering in Education (CEIE)**, for a four year term from March 2021 until 2024.



CEIE –

Mentoring Session of Institution of Engineers Mauritius
(IEM) with National Board of Accreditation (NBA), India and
Engineer Council of South Africa (ECSA)

Engineering Education Accreditation Committee (EEAC)



**The mentoring session of Engineers Board of Kenya (EBK)
with Pakistan Engineering Council (PEC) & Board of Engineers Malaysia (BEM)**

Engineering Education Accreditation Committee (EEAC)

Zoom Meeting

Recording...

Participants (9)

Find a participant

- M Zaw Min Aung (Host, me)
- AC Andre Chan
- Marlene Kanga
- Brandon Collier-Reed (he/his)
- DD Donald Dhondee
- JS JAGADISH SOOBARAH
- KG Kamlesh Greedharry
- SA Sanjay Agrawal
- Secretariat CEIE

Andre Chan

Zaw Min Aung

Marlene Kanga

Kamlesh Greedharry

JAGADISH SOOBARAH

Sanjay Agrawal

Brandon Collier-Reed (he/his)

Donald Dhondee

Secretariat CEIE

WFEO-CEIE

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CEIE - The 9th Mentoring Meeting of IEM-NBA and ECSA (18-8-2022)



Activities Webpage

EEAC Webpage

<https://myanmarengc-eeac.org/>

CEIE Webpage

<http://www.wfeo.org/committee-education-in-engineering/>

WFEO Webpage – IDEAS Journals

<https://www.wfeo.org/ideas-engineering-education-journal-number-20/>