WORKSHOP

Beginner Guidelines for Evaluation and Assessment of Engineering Education Accreditation

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Chair, Canberra Accord (2023-2025)

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Immediate Past President,
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Immediate Past President,
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September 6, 2024
Federation of Myanmar Engineering Societies

Workshop Outlines

- About IEET
- Global Recognition of Engineering Degrees
- Basic Concepts of OBE
- Accreditation Criteria & Guidelines

Workshop Outlines

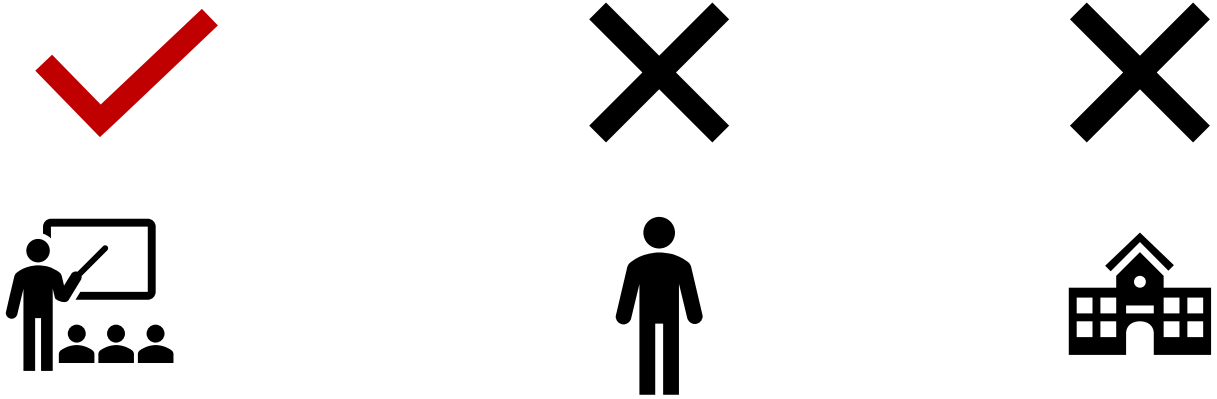
About IEET

Global Recognition of Engineering Degrees

Basic Concepts of OBE

Accreditation Criteria & Guidelines

IEET & MEngC
Accreditation is on PROGRAMS, not individual, not department, not institution



Program Accreditation

Educational Accreditation is a process of *quality assurance.* It is the act of certifying whether an educational institution or program meets specified requirements of academic achievement, level of facilities, appropriateness of curriculum, and the like.

Outcome-Based Accreditation primarily assesses whether the graduate (completed product!) meets the defined expectations, called «outcomes» or «attributes».

In the service sector of *education*, there are **institutional accreditation** and **program accreditation** activities. The first makes a wholesome evaluation of the institution (university, college, school) in which there are many programs.

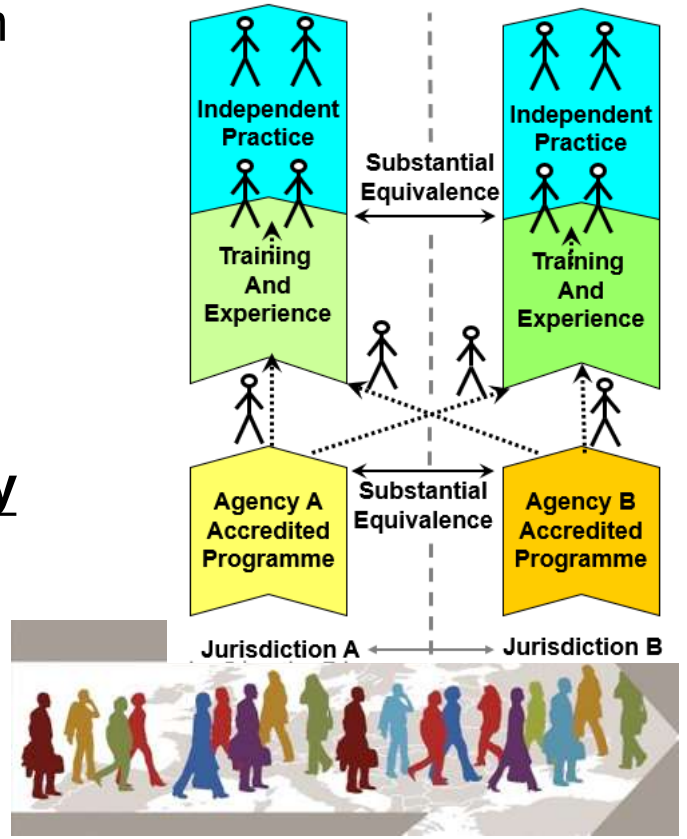
Program accreditation is a much closer look at a specific program through the eyes of peer experts on that type of program.

What is Accreditation & Why International Accords Matter

1. Quality Assurance of Education via Accreditation

- A **voluntary process** involving a program to encourage **high standards of education**
- Accreditation indicates that the IEET judges that
  - ✓ **the program, in a manner consistent with the agency's standards,**
  - ✓ **offers its students on a satisfactory level of the educational opportunities implied in its objectives and is likely to continue to do so**.

2. International Mobility of Professionals

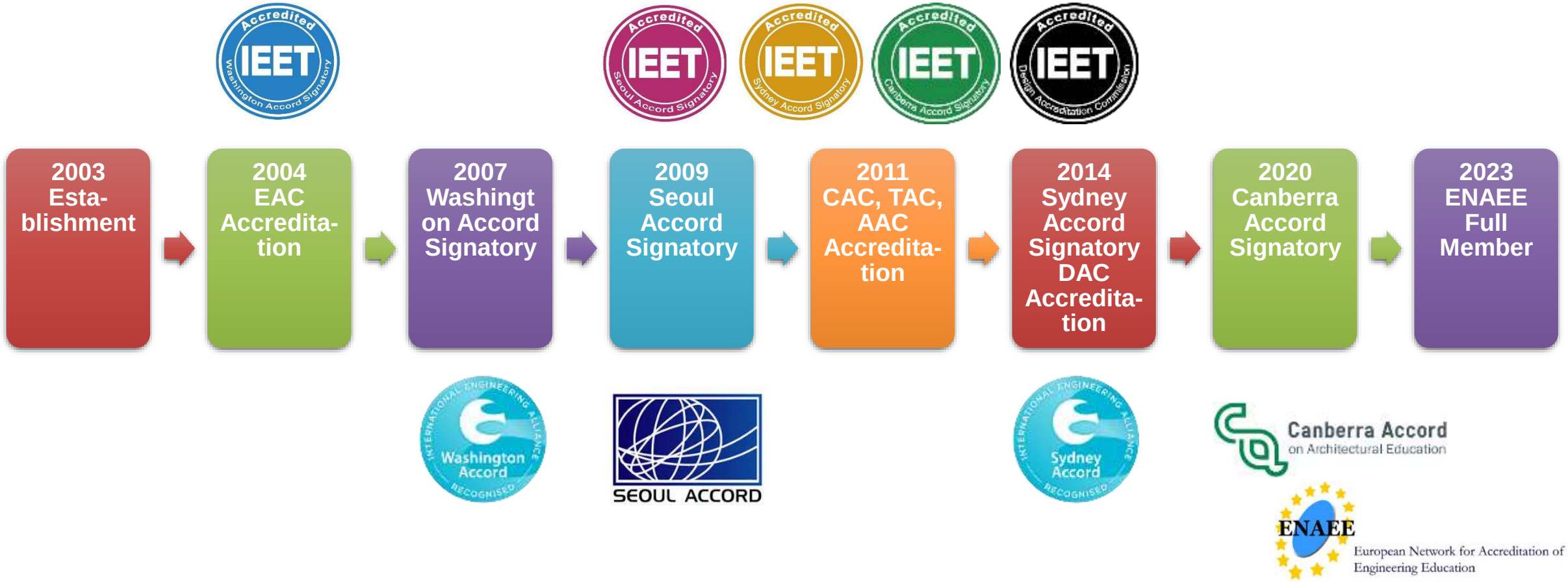


Graduates from substantially equivalent programmes A and B are able to proceed to further professional development toward substantially equivalent professional competency levels

Implement Program Accreditation in 5 Disciplines

Discipline	Engineering Education	Computing Education	Technology Education		Architectural Education	Design Education
IEET Commission	Engineering Accreditation Commission (EAC)	Computing Accreditation Commission (CAC)	Technology Accreditation Commission (TAC)		Architectural Accreditation Commission (AAC)	Design Accreditation Commission (DAC)
Degree	Bachelor's Degree or above					
Professional Title/ Licensure	Professional Engineer 4-year Degree Program	Computing or IT-related field Professional Engineer 4-year Degree Program	Engineering Technologist (TAC) 4-year Degree Program	Technologist (GTAC) 4-year Degree Program	Architect 5-year Degree Program	Designer 4-year Degree Program
International Agreement	Washington Accord signatory Since 2007	Seoul Accord signatory Since 2009	Sydney Accord signatory Since 2014	N/A	Canberra Accord signatory Since 2020	N/A

IEET's Path
Toward International Recognition



Signatory of & Leadership Role in 4 International Accords

Accord	Washington Accord	Seoul Accord	Sydney Accord	Canberra Accord
Discipline	Engineering	Computing and IT	Engineering Technology	Architecture
Membership	Since 2007	Since 2009	Since 2014	Since 2020
Leadership Role	Chair 2015-2019	Secretariat 2013	Chair 2023-2025	Chair 2023-2025

INTERNATIONAL ENGINEERING ALLIANCE

Canberra Accord on Architectural Education

2023.11.09

IEET Became ENAEE Full Member

The European Network for Accreditation of Engineering Education

ENAEE Home | EUR-ACE® system | About ENAEE | Documents | Members | News & Events

E: **international@engc.org.uk** W: **www.engc.org.uk**

ENGINEERS IRELAND

22 Clyde Road, Ballsbridge, Dublin D04R3N2, Ireland
E: **info@engineersireland.ie** W: **www.engineersireland.ie**

FINEEC – Kansallinen Koulutuksen Arviointikeskus Karvi

P.O. Box 28 (Mannerheiminaukio 1A, 6th floor), 00101 Helsinki, Finland
E: **kati.isoaho@karvi.fi** W: **karvi.fi/en**

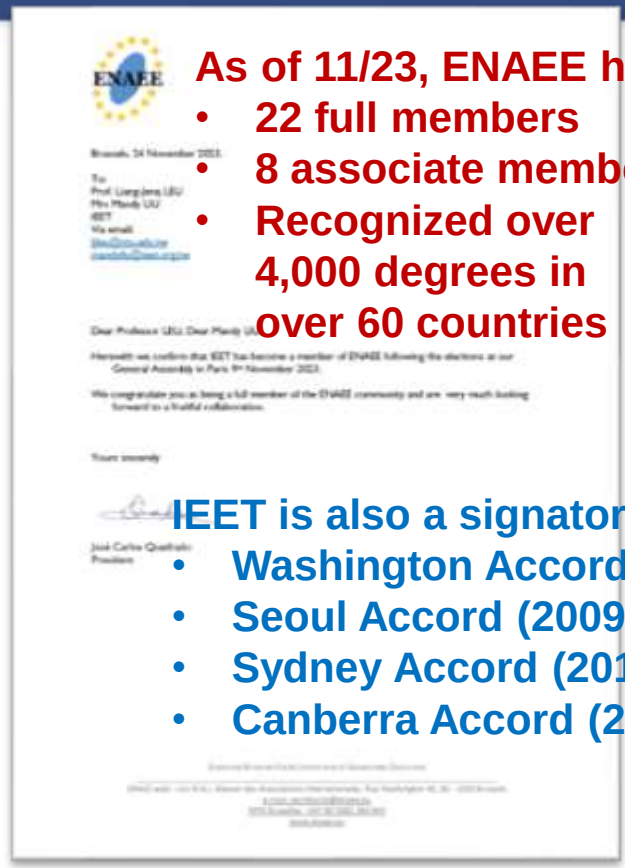
ICACIT – Instituto de Calidad y Acreditación de Programas de Comp

Av. Del Pinar 152. Of. 707, Santiago de Surco, Lima, Perú
E: **informes@icacit.org.pe** W: **icacit.org.pe**

IEET – Institute of Engineering Education Taiwan (Full Member as of 2023)

7F, No.554, Linsen North Rd., Zhongshan District,
Taipei, 104030, Taiwan
E: **international@ieet.org.tw** W: **www.ieet.org.tw/Pages/index.aspx**

Right, ENAEE President, Prof. José Carlos Quadrado
Left, IEET CEO, Prof. Liang-Jenq Leu



As of 11/23, ENAEE has
- **22 full members**
- **8 associate members**
- **Recognized over 4,000 degrees in over 60 countries**

IEET is also a signatory of:
- **Washington Accord (2007)**
- **Seoul Accord (2009)**
- **Sydney Accord (2014)**
- **Canberra Accord (2020)**

IEET was voted as an ENAEE full member at the ENAEE's November 9, 2023 General Assembly in Paris, France.

IEET Serves as Mentor for…

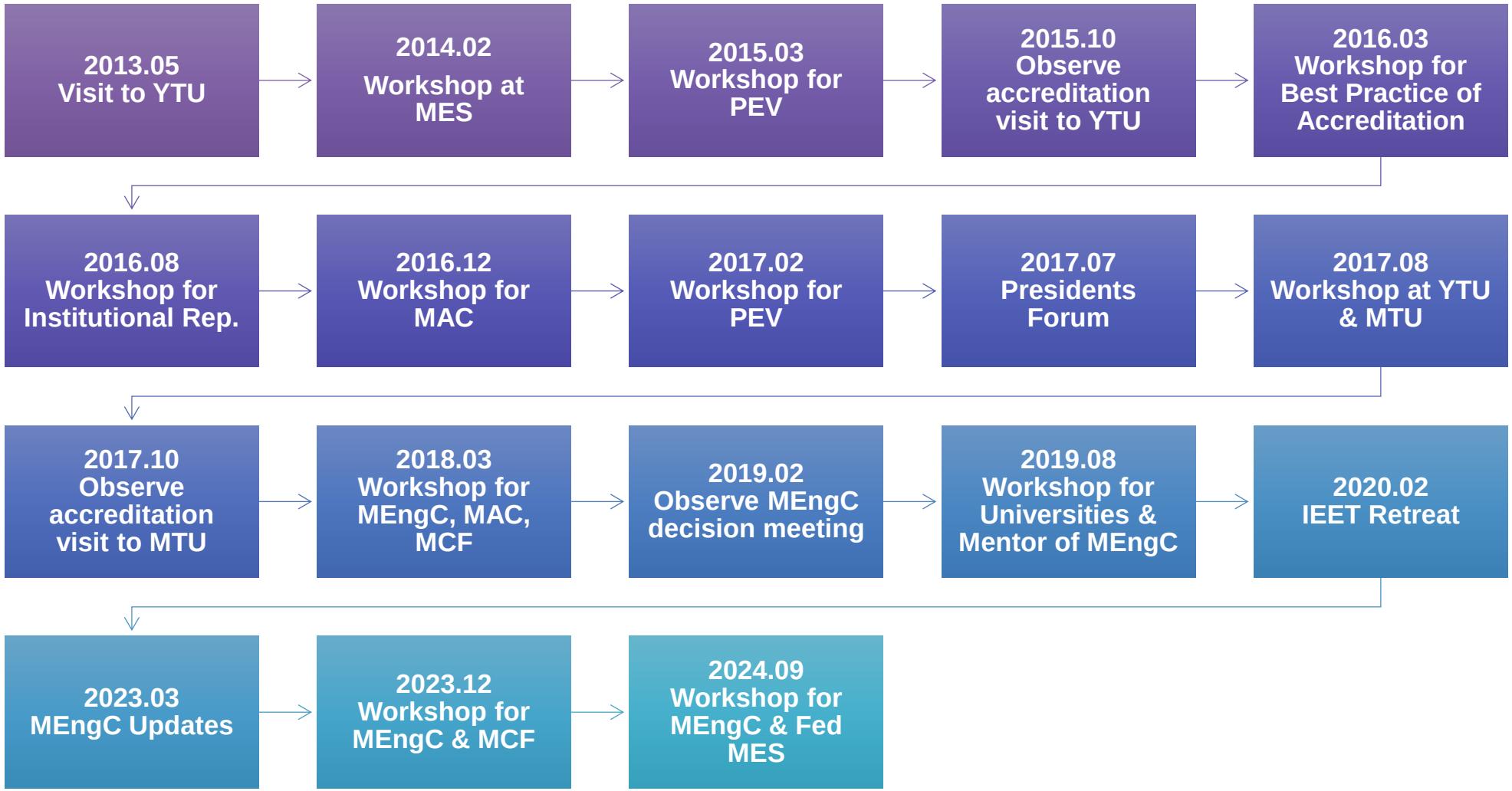
Myanmar/
Myanmar Engineering Council
Washington Accord
(currently Provisional Member)

Thailand/
Council of Engineers Thailand
Washington Accord
(currently Provisional Member)

Saudi Arabia/
ETEC
Washington Accord
(Under WA Verification Review)
Seoul Accord
(Under SA Verification Review)

IEET 中華工程教育學會

Visits to Myanmar since 2013 (18 times and counting…)



Workshop Outlines

- About IEET
- **Global Recognition of Engineering Degrees**
- Basic Concepts of OBE
- Accreditation Criteria & Guidelines

Overview of International Accords of Accrediting Agencies

	Washington Accord	Sydney Accord	Dublin Accord	Seoul Accord	Canberra Accord	ENAEE
Year Established	1989	2001	2002	2008	2008	2006
Discipline	Engineering	Engineering Technology	Engineering Technology	Computing and IT-related	Architectural	Engineering
Degree Qualification for Title	Professional Engineer	Engineering Technologist	Engineering Technician	Professional Engineer or other related	Architect	Professional Engineer
Year of Education	K12+ 4 normally	K12+ at least 3	K12+ at least 2	K12+ 4 normally	K12+ 5 normally	K12+ at least 3
Number of Signatory (as of Dec '24)	25	11	9	13	9	22
IEET Membership	Yes	Yes	No	Yes	Yes	Yes

Washington Accord

- The Washington Accord (WA) is an agreement among signatory accrediting agencies that:
  - criteria, policies and procedures for **accrediting engineering academic programs** are verified to be comparable
  - for **academic programs providing the educational foundation for the practice of engineering at the professional level**
- Students are expected to be able to solve **complex engineering problems** by graduation

Washington Accord Membership
(in the order of admission year)

Full signatory

1. New Zealand - Represented by Engineering New Zealand (EngNZ) (1989)
2. Australia - Represented by Engineers Australia (EA) (1989)
3. Canada - Represented by Engineers Canada (EC) (1989)
4. Ireland - Represented by Engineers Ireland (EI) (1989)
5. United Kingdom - Represented by Engineering Council United Kingdom (ECUK) (1989)

Founding Signatories

6. United States - Represented by ABET (1989)
7. Hong Kong China - Represented by The Hong Kong Institution of Engineers (HKIE) (1995)
8. South Africa - Represented by Engineering Council South Africa (ECSA) (1999)
9. Japan - Represented by JABEE (2005)
10. Singapore - Represented by Institution of Engineers Singapore (IES) (2006)
11. Chinese Taipei - Represented by Institute of Engineering Education Taiwan (IEET) (2007)
12. Korea - Represented by Accreditation Board for Engineering Education of Korea (ABEEK) (2007)
13. Malaysia - Represented by Board of Engineers Malaysia (BEM) (2009)
14. Turkey - Represented by Association for Evaluation and Accreditation of Engineering Programs (MÜDEK) (2011)
15. Russia - Represented by Association for Engineering Education of Russia (AEER) (2012)
16. India - Represented by National Board of Accreditation (NBA) (2014)
17. Sri Lanka - Represented by Institution of Engineers Sri Lanka (IESL) (2014)
18. China - Represented by China Association for Science and Technology (CAST) (2016)
19. Pakistan - Represented by Pakistan Engineering Council (PEC) (2017)
20. Peru - Represented by Instituto de Calidad y Acreditacion de Programas de Computacion, Ingenieria y Tecnologia (ICACIT) (2018)
21. Costa Rica - Represented by Colegio Federado de Ingenieros y de Arquitectos de Costa Rica (CFIA) (2020)
22. Mexico - Represented by Consejo de Acreditación de la Enseñanza de la Ingeniería (CACEI) (2022)
23. Indonesia - Represented by Indonesian Accreditation Board for Engineering Education (IABEE) (2022)
24. Bangladesh - Represented by The Institution of Engineers Bangladesh (IEB) (2023)
25. Philippines - Represented by Philippine Technological Council (PTC) (2023)

Provisional

1. Chile - Represented by Agencia Acreditadora Colegio De Ingenieros De Chile S A (ACREDITA CI) (2018)
2. Thailand - Represented by Council of Engineers Thailand (COET) (2019)
3. Myanmar - Represented by Myanmar Engineering Council (MEngC) (2019)
4. Saudi Arabia - Represented by Education and Training Evaluation Commission (ETEC) (2022)
5. Nigeria - Represented by Council for the Regulation of Engineering in Nigeria (COREN) (2023)
6. Mauritius - Represented by Institution of Engineers Mauritius (IEM)

As of June 2024, WA recognizes over 8,000 programs in total

Sydney Accord

- As with the other Accords the signatories are committed to development and recognition of good practice in engineering education. **The Sydney Accord is specifically focused on academic programmes dealing with engineering technology**.
- Students are expected to be able to solve **broadly-defined engineering problems** by graduation

Sydney Accord Membership (in the order of admission year)

#	JURISDICTION	ORGANIZATION		ADMISSION
1	Australia	Engineers Australia (EA)	Founding Signatories	2001
2	Canada	Technology Professionals Canada (TPC) (2023) Canadian Council of Technicians and Technologists (CCTT) (2001-2022)		2001
3	Hong Kong China	The Hong Kong Institution of Engineers (HKIE)		2001
4	Ireland	Engineers Ireland (EI)		2001
5	South Africa	Engineering Council South Africa (ECSA)		2001
6	United Kingdom	Engineering Council United Kingdom (ECUK)		2001
7	New Zealand	Engineering New Zealand (EngNZ)		2001
8	United States	Accreditation Board for Engineering and Technology (ABET)		2009
9	Korea	Accreditation Board for Engineering Education of Korea (ABEEK)		2013
10	Chinese Taipei	Institute of Engineering Education Taiwan (IEET)		2014
11	Malaysia	Board of Engineers Malaysia (BEM)		2018
(P) 1	Peru	Instituto de Calidad y Acreditacion de Programas de Computacion, Ingenieria y Tecnologia (ICACIT)		
(P) 2	Sri Lanka	Institution of Engineers Sri Lanka (IESL)		

As of June 2024, SA recognizes about 850 programs in total

Dublin Accord

- As with the other Accords the signatories are committed to development and recognition of good practice in engineering education. **The Dublin Accord is specifically focused on the mutual recognition of academic programmes/qualifications that underpin the educational base for Engineering Technicians**.
- Students are expected to be able to solve **well-defined engineering problems** by graduation

Dublin Accord Membership (in the order of admission year)

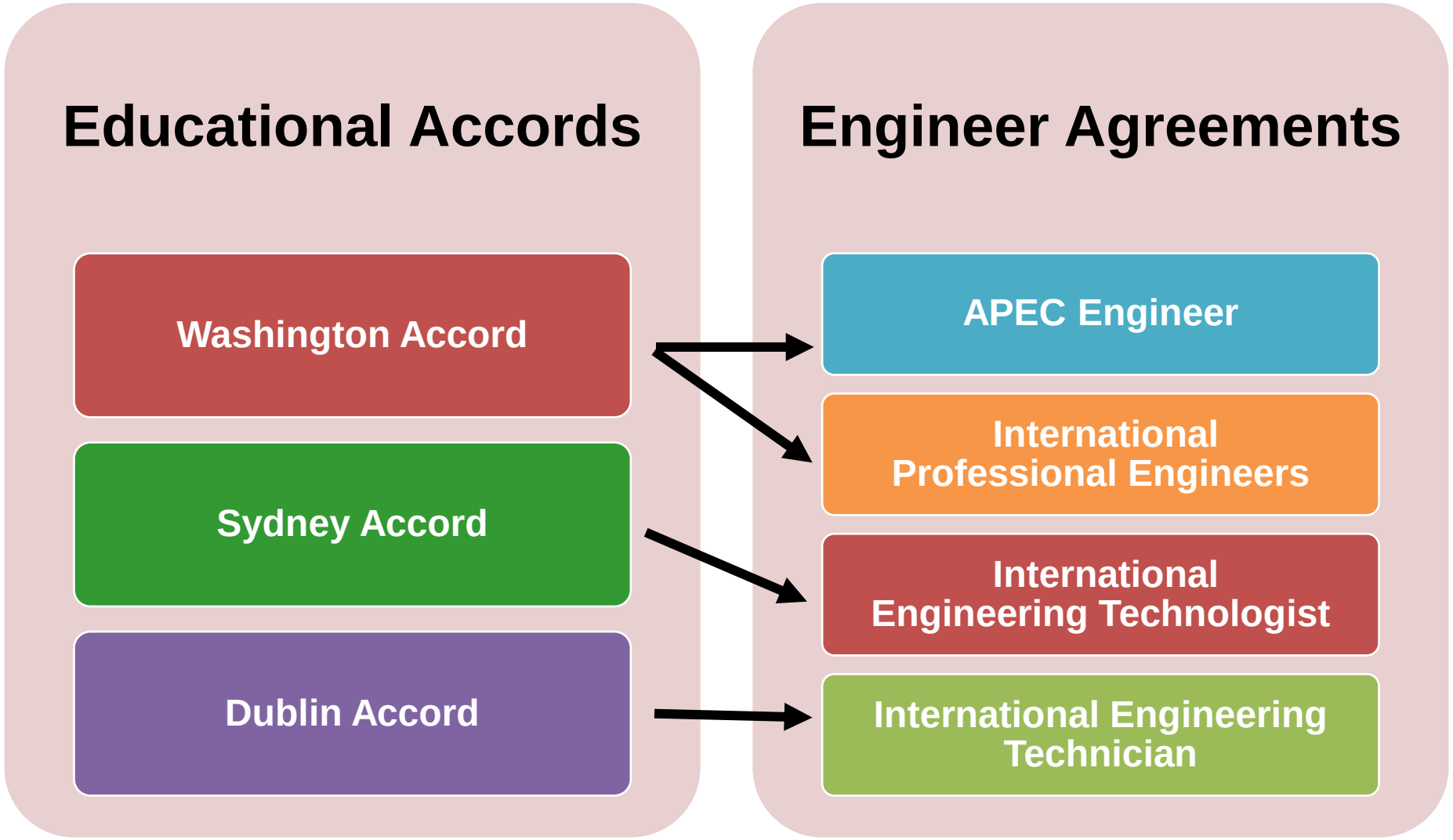
#	JURISDICTION	ORGANIZATION	ADMISSION
1	Ireland	Engineers Ireland (EI)	2002
2	New Zealand	Engineering New Zealand (EngNZ)	2013
3	South Africa	Engineering Council South Africa (ECSA)	2002
4	United Kingdom	Engineering Council United Kingdom (ECUK)	2002
5	Australia	Engineers Australia (EA)	2013
6	Canada	Technology Professionals Canada (TPC) (2023) Canadian Council of Technicians and Technologists (CCTT) (2002-2022)	2013
7	Korea	Accreditation Board for Engineering Education of Korea (ABEEK)	2013
5	United States	Accreditation Board for Engineering and Technology (ABET)	2013
9	Malaysia	Board of Engineers Malaysia (BEM)	2018

Comparisons

	Washington Accord	Sydney Accord	Dublin Accord
Level of problems be able to solve	Complex Problems	Broadly-defined Problems	Well-defined Problems
Typical length of education	Typically 4-5 years of study depending on the level of students at entry	Typically 3-4 years of study depending on the level of students at entry	Typically 2-3 years of study depending on the level of students at entry

International Mobility of Engineers

International Engineering Alliance (IEA) as an Example



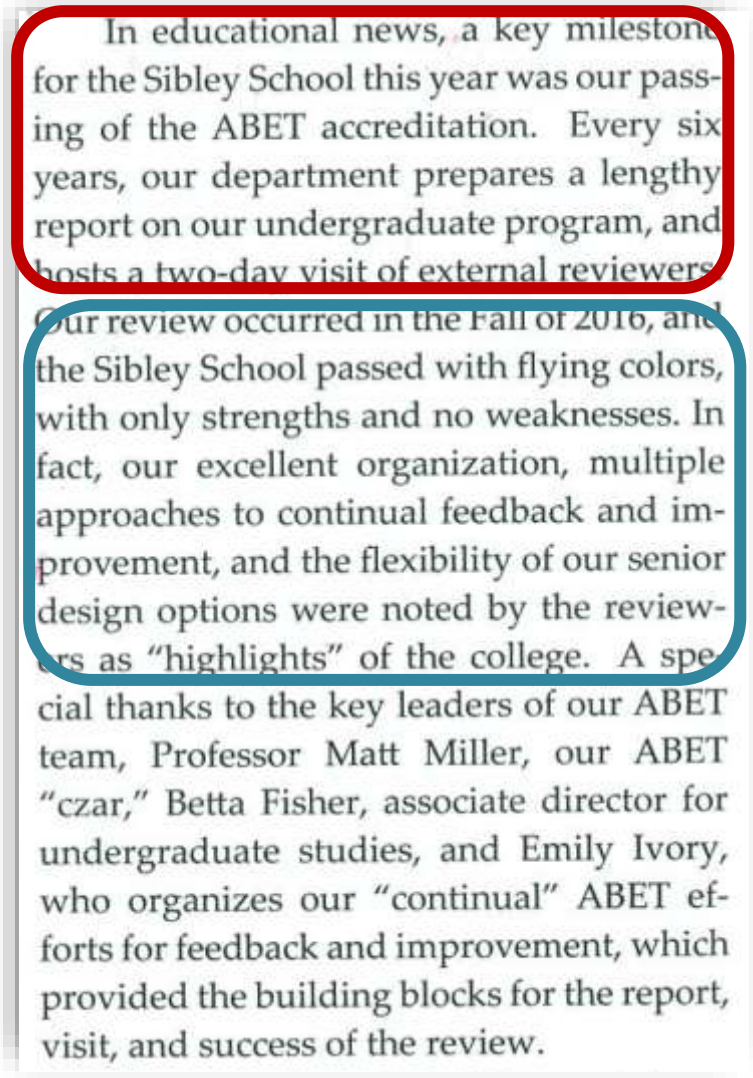
Signatories of International Accords on the basis of substantial equivalency

recognize graduates of programs accredited by the other signatories

***Substantial equivalence* at the educational level:**
Achieving outcomes that whilst not individually identical to those of the standard … taken cumulatively achieve the same overall outcome

- **Criteria, policies and procedures are verified comparable**
- **Accreditation decisions acceptable to other signatories**
- **Graduate attributes are substantial equivalent**

Program at Cornell Broadcasted its Accreditation Status to Alumni



In educational news, a key milestone for the Sibley School this year was our passing of the ABET accreditation. Every six years, our department prepares a lengthy report on our undergraduate program, and hosts a two-day visit of external reviewers. Our review occurred in the Fall of 2016, and the Sibley School passed with flying colors, with only strengths and no weaknesses. In fact, our excellent organization, multiple approaches to continual feedback and improvement, and the flexibility of our senior design options were noted by the reviewers as "highlights" of the college. A special thanks to the key leaders of our ABET team, Professor Matt Miller, our ABET "czar," Betta Fisher, associate director for undergraduate studies, and Emily Ivory, who organizes our "continual" ABET efforts for feedback and improvement, which provided the building blocks for the report, visit, and success of the review.

… a key milestone for the Sibley School this year was our passing of the ABET accreditation…

…our excellent organization, multiple approaches to continual feedback and improvement, and the flexibility of our senior design options were noted by the reviewers…

MAE Magazine

(Alumni Newsletter Winter 2017)

Message from Mark Campbell
Director of the Cornell University

Sibley School of Mechanical and Aerospace Engineering

International Recognition Cases

From…	Case
Parents	A parent of a foreign student called IEET to double-check the accreditation status of an EE program that her son was to enroll in. Unfortunately, the program was no longer accredited.
Graduates	A graduate called IEET to confirm whether his degree could be recognized because he was going abroad for a job offer.
Foreign Intl Engr Org	A foreign engineering board called IEET to verify a program's accreditation status about an applicant for licensure.
Programs	An IEET-accredited program was seeking international collaboration (exchange of students/double degree) with sister universities. The negotiation process was not very smooth until the foreign universities realized the IEET-accredited status of the program.
Company	A foreign company was to recruit engineers from Taiwan and sought confirmation from IEET about the accreditation status of programs.

A Recent Case

July 2023/Email to IEET:

I am a student from Malaysia and interested to study electrical engineering in Taiwan. I noticed the accreditation status for the National ○○○○ University only valid until Dec 2018 under the Washington Accord. Does it mean the Electrical engineering program offered by the National ○○○○ University no longer valid with its accredited status and thus not recognised by other signatories of the Washington Accord?

Looking forward for your reply.

Logos Awarded to IEET Accredited Programs

EAC

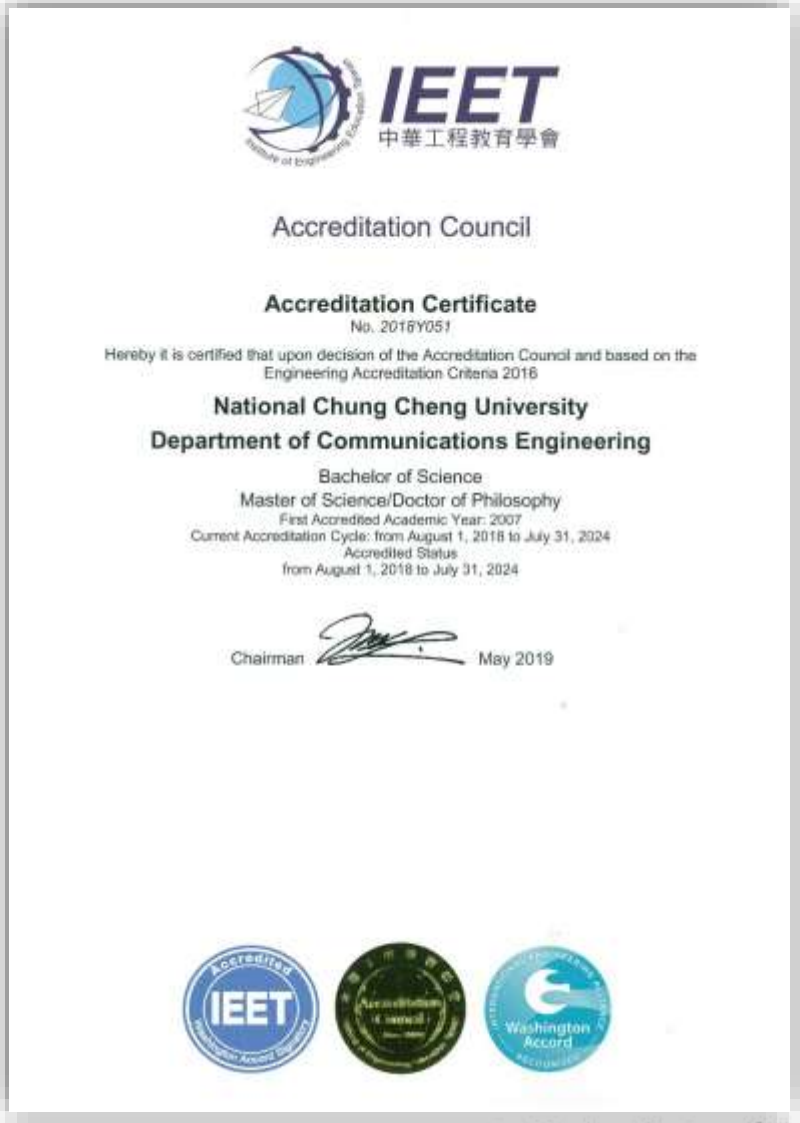
CAC

TAC

AAC

DAC

Accredited Logos Placed on Certificate and Diploma



IEET 中華工程教育學會

Accreditation Council

Accreditation Certificate

No. 2016Y051

Hereby it is certified that upon decision of the Accreditation Council and based on the Engineering Accreditation Criteria 2016

National Chung Cheng University

Department of Communications Engineering

Bachelor of Science

Master of Science/Doctor of Philosophy

First Accredited Academic Year: 2007

Current Accreditation Cycle: from August 1, 2018 to July 31, 2024

Accredited Status

from August 1, 2018 to July 31, 2024

Chairman May 2019

南華大学

NANHUA UNIVERSITY

南華(1位)碩字第 號

身分證字號：

學號：

碩士學位證書

學生○○○係中華民國柒拾壹年伍月貳拾參日生

在本校科技學院自然生物科技學系自然療癒碩士班

修業期滿成績及格准予畢業依學位授予法之規定授予

理學碩士學位 此證

is hereby granted the degree of

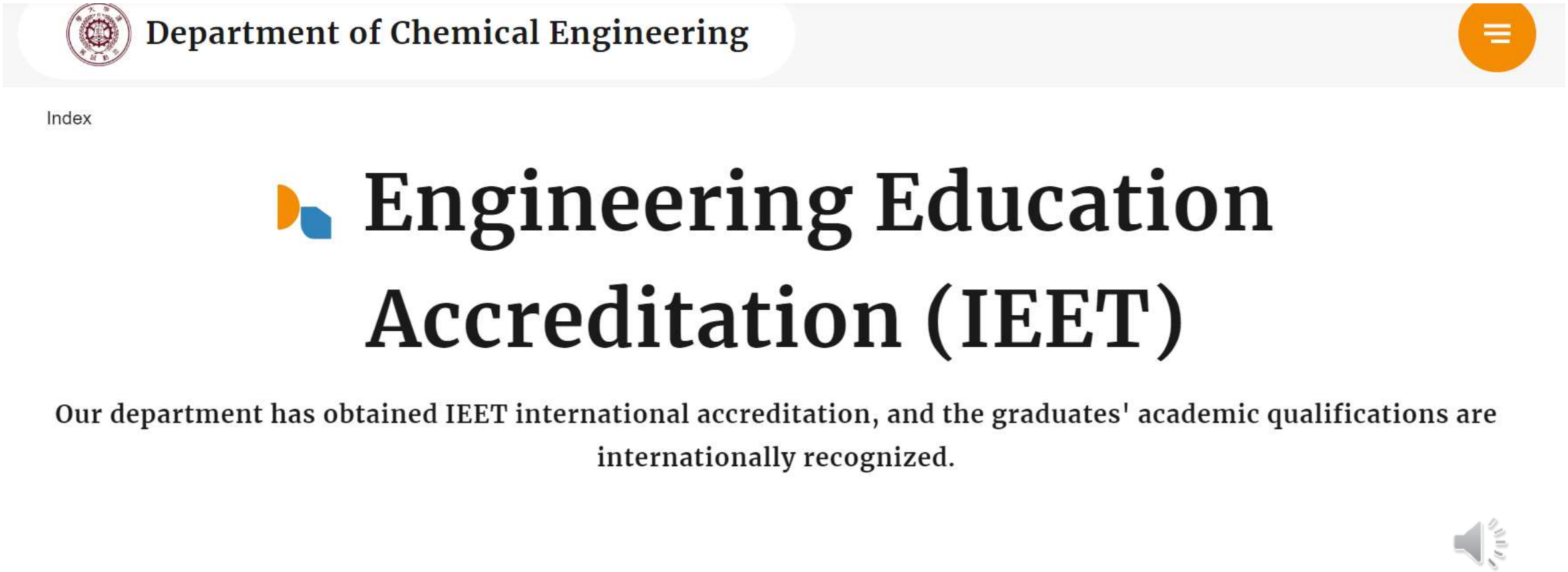
Master of Science

in the Department of Natural Biotechnology, Master's Program in Natural Healing Sciences, College of Science and Technology, with rights, honors and privileges pertaining thereto, given on the 15 June, 2013.

校長 (PRESIDENT)

中 華 民 國 102 年 6 月

IEET Accredited Program Promotes its Accredited Status on Website



International Monitoring System of the Accreditation Agency

Yr/Acd	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Washington	Sig.					PR						PR							PR
Seoul			Sig.									PR							PR
Sydney								Sig.				PR							PR
Canberra														Sig.					PR
ENAEE																	FM	Re-view	

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Outcomes-based Approach

INTERNATIONAL ENGINEERING ALLIANCE

INTERNATIONAL ENGINEERING ALLIANCE

GRADUATE ATTRIBUTES & PROFESSIONAL COMPETENCIES

PROUDLY SUPPORTED BY:

PREAMBLE

The International Engineering Alliance is pleased to announce that all Accords and Agreements have approved revisions to its Graduate Attributes and Professional Competencies (GAPC) international benchmark. The review, supported by UNESCO, was undertaken by a joint IEA-WFEO Working Group who engaged extensively with IEA signatories, WFEO members and WFEO partners representing academics, industry and women globally. They reflect requirements for new technologies and engineering disciplines, new pedagogies and values such as sustainable development, diversity and inclusion and ethics. They are well positioned to support the engineering role in building a more sustainable and equitable world.

Our thanks to UNESCO and WFEO for their constant support and endorsement and to the GAPC Working Group members, who commenced this work three years ago and who have worked tirelessly to bring this to fruition.

VERSION: 2021.1

The documents presented in this compendium are current as of 21 June 2021.

While it could be a matter of pedagogy for attaining course/programme learning outcomes, the faculty members and programme administrators must have full understanding of OBE/OBA and conduct the actual assessment and evaluation periodically to demonstrate the degree of attainment of programme outcomes.

The graduate outcomes standard applied for accreditation is substantially equivalent to that of the Accord (as illustrated by the Accord graduate attributes exemplar).

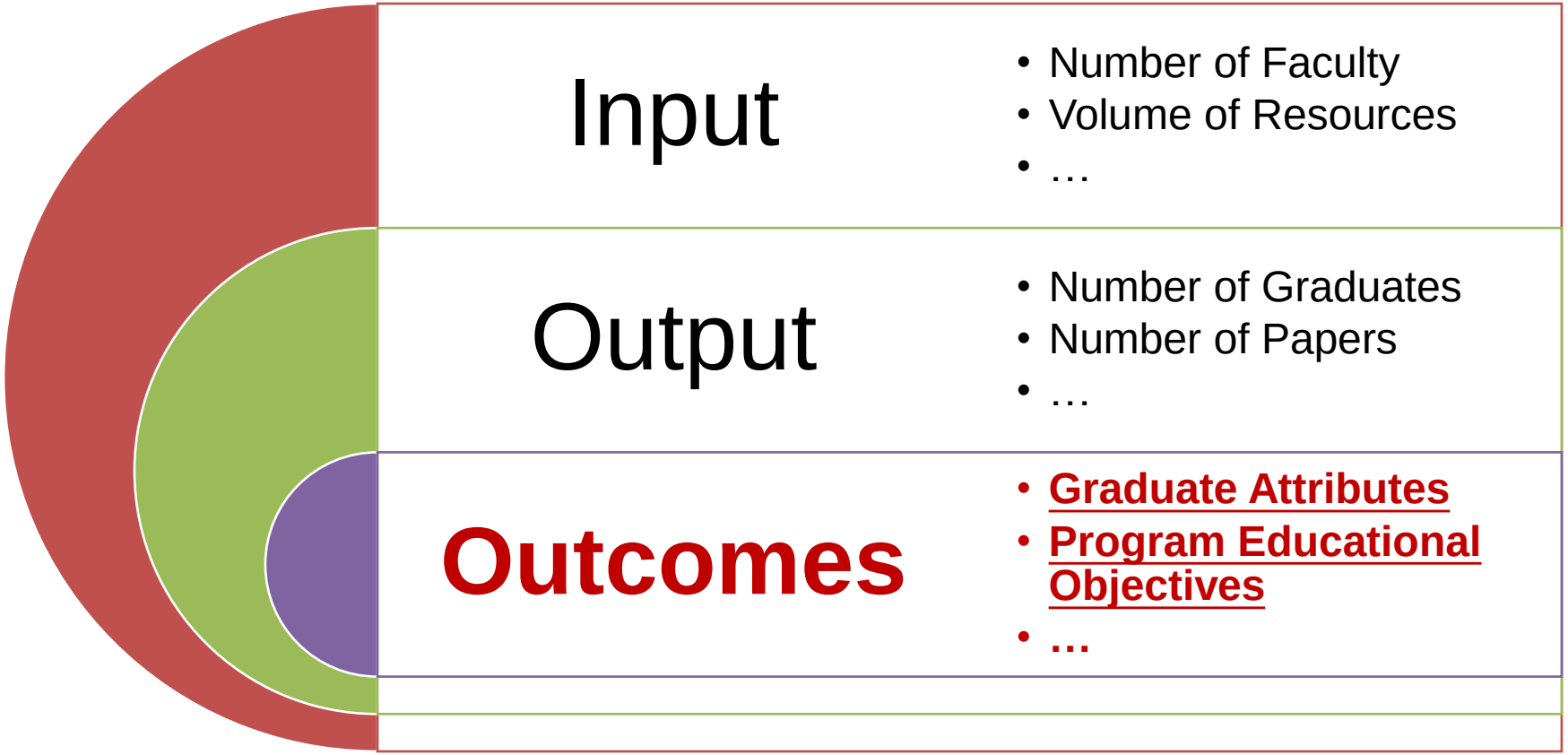
Definition of OBE

"**Outcome-based education (OBE)** means clearly focusing and organizing everything in an educational system around what is essential for all students to be able to do successfully at the end of their learning experiences. This means starting with a clear picture of what is important for all students to be able to do, then organizing curriculum (outcome), instruction (activity), and assessment to make sure this learning ultimately happens"

Outcomes Based Education: Critical Issues

by William Spady (1995)

What are Outcomes in the Accreditation Process ?



So-called "bean counting"

GAPC: Definition and Scope

The IEA Rules and Procedures definitions for GA and PC:

Graduate attributes form a set of individually assessable outcomes that are the components indicative of the **graduate's potential** to acquire competence **to practice** at the appropriate level. The attributes are clear, succinct statements of the expected capability.

The graduate attributes identify the distinctive roles of *engineers, technologists and technicians*

P*rofessional competency profiles* record the elements of competency necessary for competent performance that the professional is expected to be able to demonstrate in a holistic way at the stage of **attaining registration.**

Graduate Attributes vs Program Educational Objectives

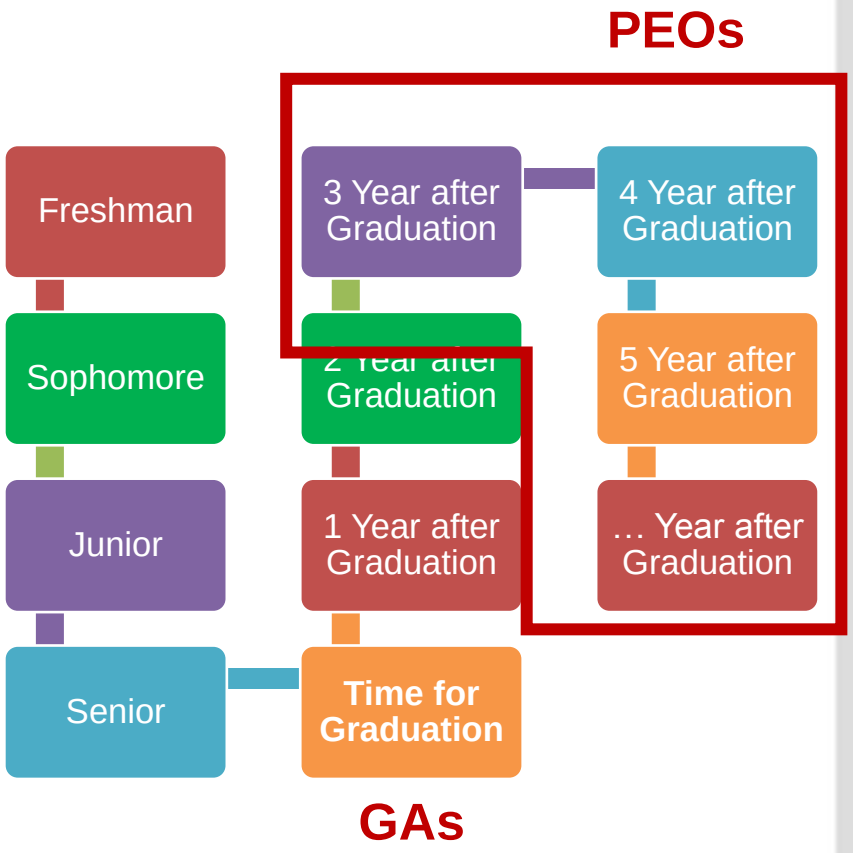
AKA:
Program Learning Outcomes

Graduate Attributes
(at time of graduation)

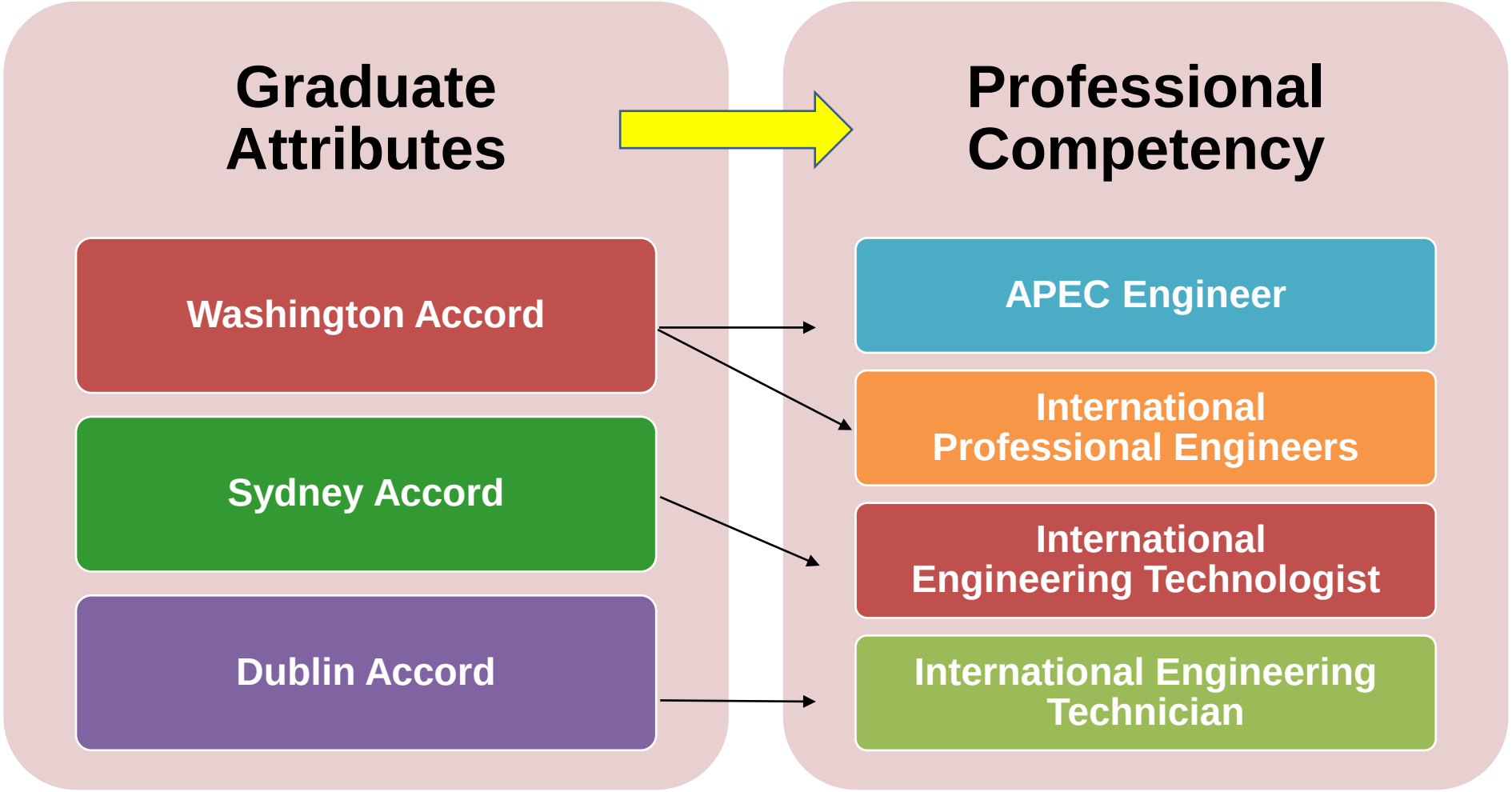
- Knowledge
- Skills
- Attitudes

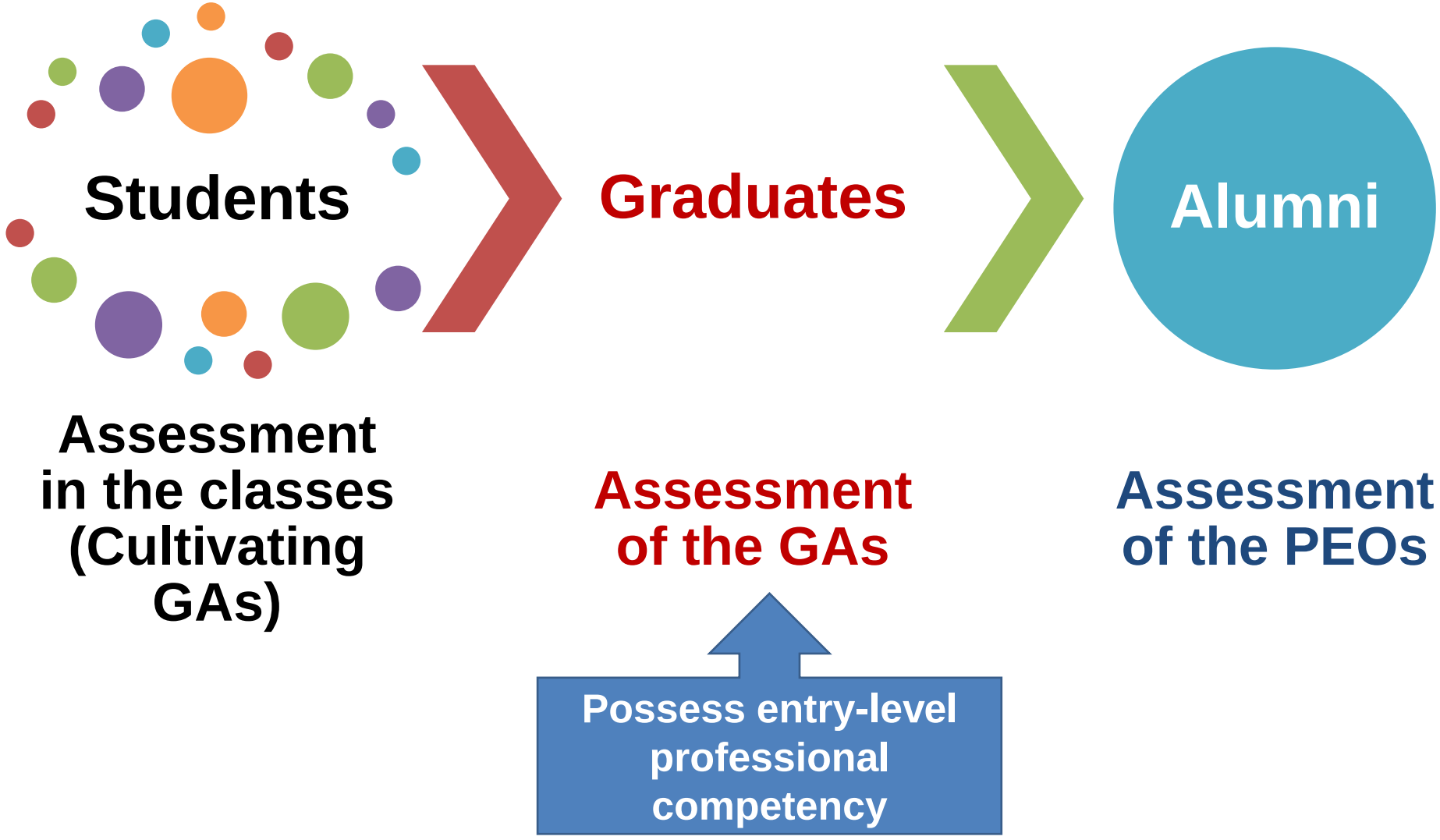
Program Educational Objectives
(Achieved 3~5 years after graduation)

- Professionals who are able to solve complex problems, contribute to the betterment of the society
- Professionals who are capable of life-long learning



PEOs are referring to "Professional Competency" of Engineers





Sample of PEOs (for a Civil Engineering Program)

1. Function successfully in a professional environment by utilizing and enhancing their problem-solving and communication skills.
2. Continue learning through graduate or other professional education and obtaining licensure where appropriate.
3. Function in team-oriented, multidisciplinary open-ended engineering activities considering the societal and economic impacts of engineering decisions, and the professional and ethical responsibilities of civil engineers.
4. Promote organizational success with consideration of cost and time management while practicing and promoting ethical behavior and stewardship of a sustainable environment.

IEET Criterion 3
Graduate Attributes (EAC for Washington Accord)

- 3.1 ability to apply knowledge of mathematics, science, and engineering;
- 3.2 ability to design and conduct experiments, as well as to analyze and interpret data;
- 3.3 ability to apply techniques, skills, and modern tools necessary for engineering practice;
- 3.4 ability to design an engineering system, component, or process;
- 3.5 ability to manage project, communicate effectively, work in multi-disciplinary environment, and function on teams;
- 3.6 ability to identify, formulate, research literature, analyze and solve complex engineering problems reaching substantial conclusions;
- 3.7 knowledge of contemporary issues; an understanding of the impact of engineering solutions in the environmental sustainability, social good, and global contexts; and the ability and habit to engage in life-long learning;
- 3.8 apply ethical principles and commit to professional and information ethics and responsibilities and norms of engineering practice, and a sense of respect for diversity.

All Graduates Must Possess all the Program's GAs

Program Must be Clear…

1. When GAs were assessed?
2. What method was taken to assess?
3. What were the standards? (Use rubrics to demonstrate)
4. If students could NOT meet the standards, what measure was taken?

Must Identify Key Corresponding GAs for Each Course

Course \ GA	1 ability to apply knowledge of mathematics, science, and engineering	2 ability to design and conduct experiments, as well as to analyze and interpret data	3 ability to apply techniques, skills, and modern tools necessary for engineering practice	4 ability to design an engineering system, component, or process	5 ability to manage project, communicate effectively, work in multi-disciplinary environment, and function on teams	6 ability to identify, formulate, research literature, analyze and solve complex engineering problems reaching substantial conclusions	7 knowledge of contemporary issues; an understanding of the impact of engineering solutions in the environmental sustainability, social good, and global contexts; and the ability and habit to engage in life-long learning	8 apply ethical principles and commit to professional and information ethics and responsibilities and norms of engineering practice, and a sense of respect for diversity
Engineering Graphics		*	*					*
Basic Design	*			*	*		*	*
Fluid Mechanism	*	*	*					
Engineering Mathematics	*	*						
Structural Mechanism	*	*	*					
…								
Capstone	*	*	*	*	*	*	*	*

Only 1 course Matches GA #6 Must Reconsider!

Each GA should have at least 2-3 courses to correspond

GAs must be shown in Syllabus

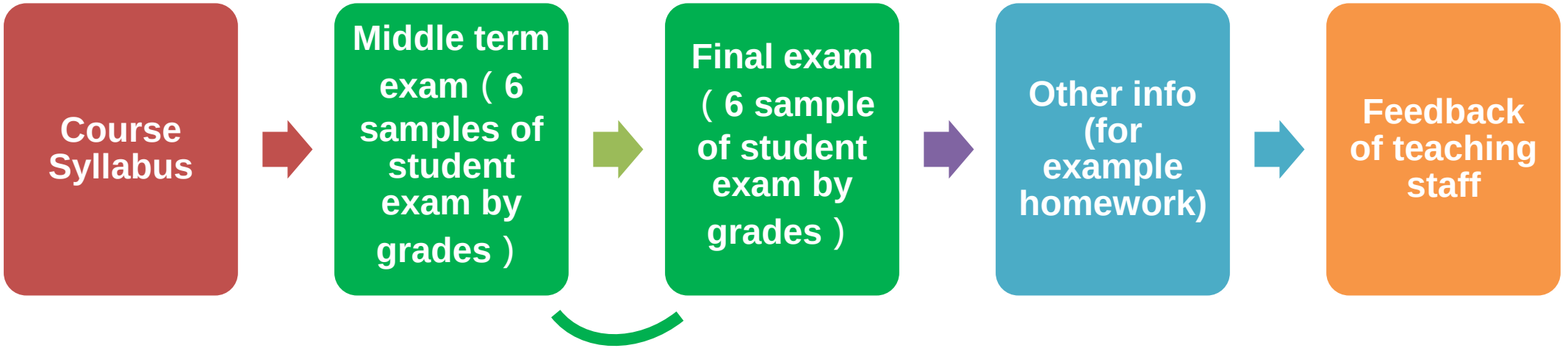
Table 4-4 Year 2016 Capstone Syllabus

(Please present other course information either on-site or electrically with each course having its syllabus, 2 samples of assignments, quizzes, exams, homework, etc. categorized by score of high, middle, and low.)

Course name				**Instructor**	
Credits/ hour		**Required/ elective**		**Course Year**	
Perquisite					
Textbook					
Topic					
1. 2. 3.					
Corresponding graduate attributes					
1.					
2.					
3.					
...					
Assessment method: □ Quiz □ Midterm □ Final □ Homework □ Report □ Oral report □ Project □ Oral test □ other: _____					

Course Portfolio

Displayed online pre-visit or on-site visit (for each required professional course)



Beginning of semester

Based on student grades in the class, 2 samples in high, middle, and low ranks, respectively.

End of semester

Course Analysis and Teaching Staff Feedbacks

A. Required Courses

Course number	Course name	Required/ elective	Instructor	Year to be taken	Credits					Number of hours	Select the corresponding attributes						Number of students	Assessment method		Average score	Rate of passage
					Total	Math	Basic Science	Engineering			Attribute 1	Attribute 2	Attribute 3	Attribut…	Attribute 7	Attribute 8					
								Theory	Design												
1																		□ Quiz □ Final □ Report □ Project □ other:	□ Midterm □Assignment □ Oral report □ Oral test		
	(Please insert course assessment and analysis)																				

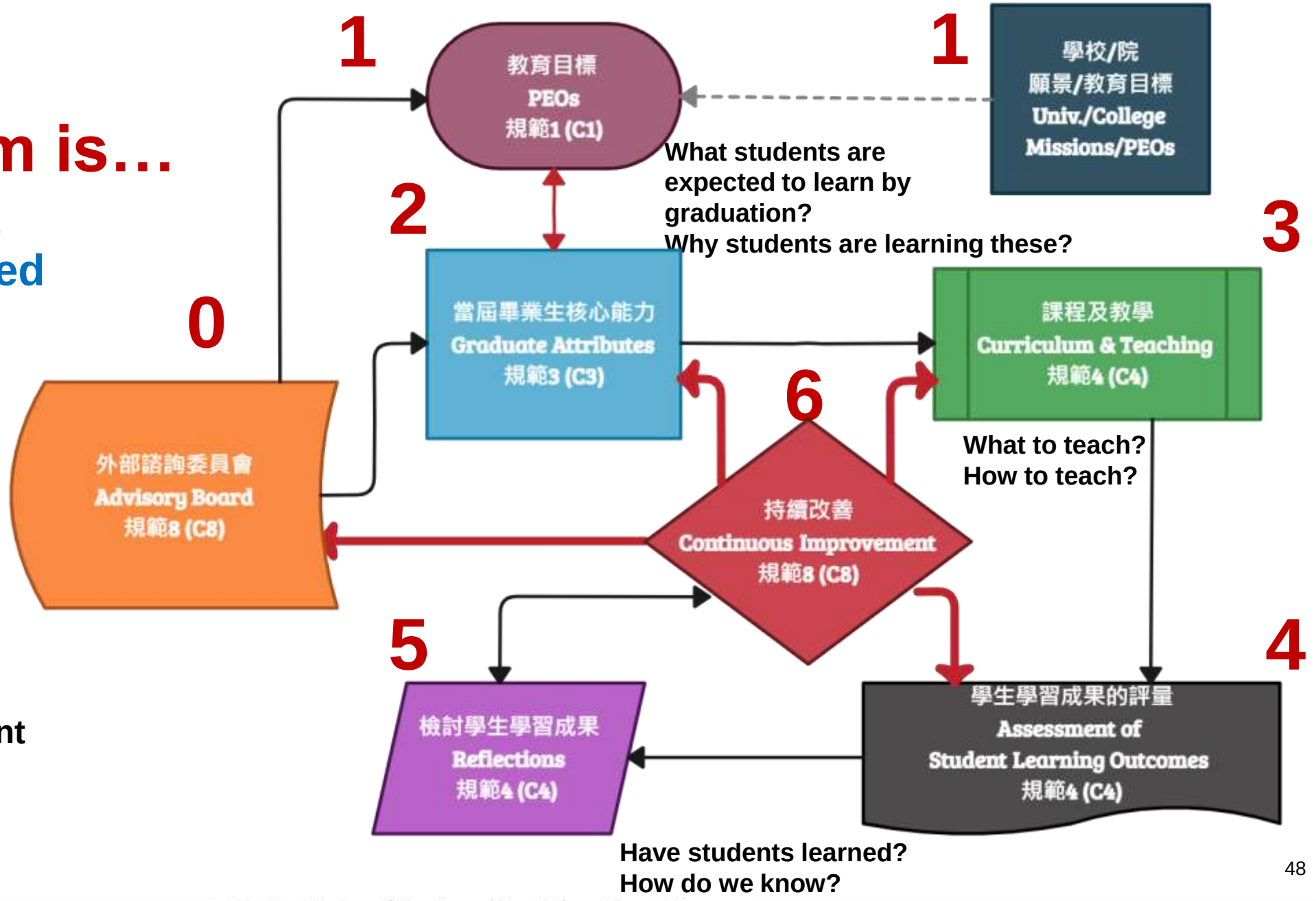
Workshop Outlines

- About IEET
- Global Recognition of Engineering Degrees
- Basic Concepts of OBE
- **Accreditation Criteria & Guidelines**

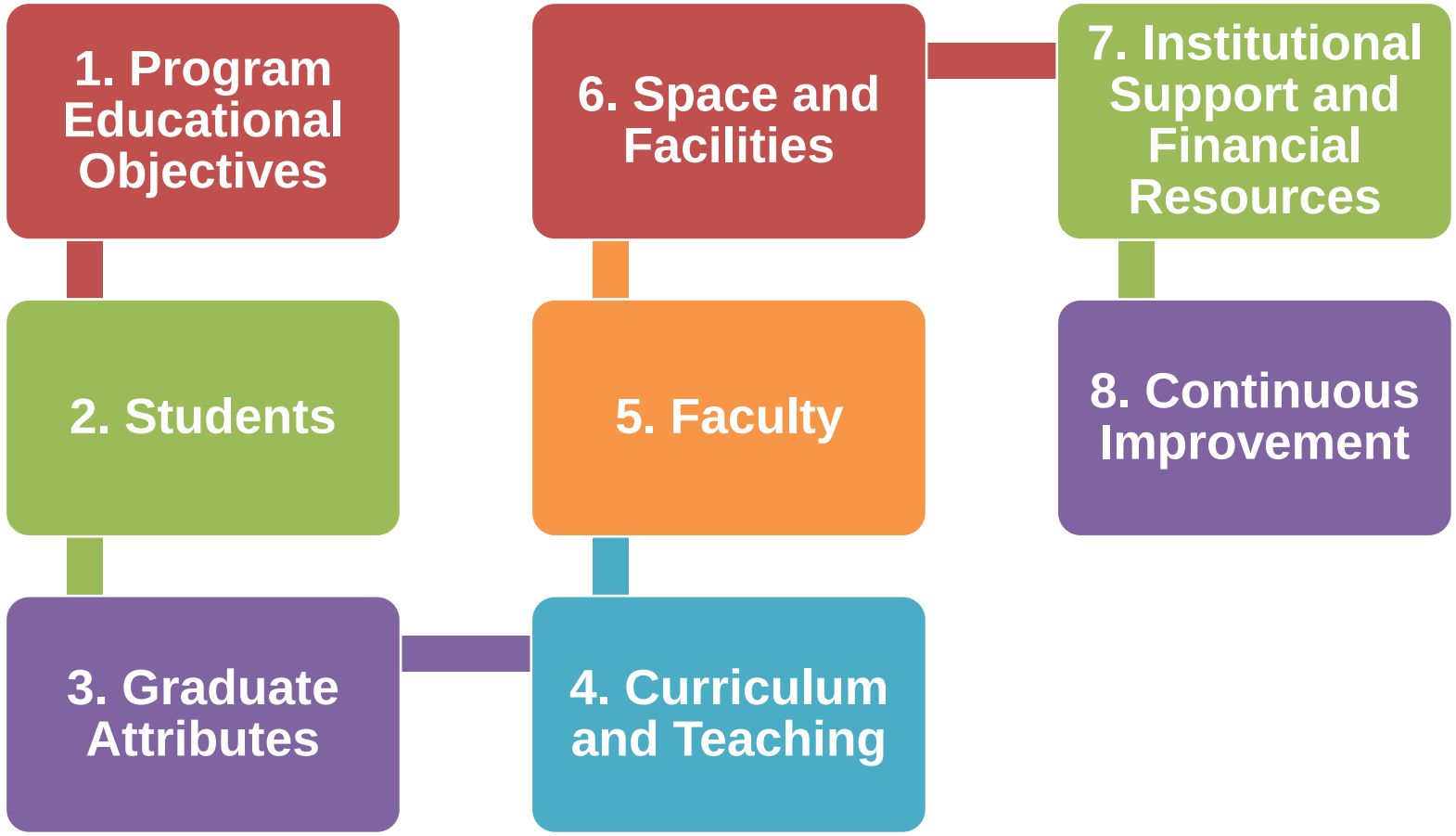
IEET System is…

Student-centered
Outcomes-oriented
Evidence-based
CQI-aimed

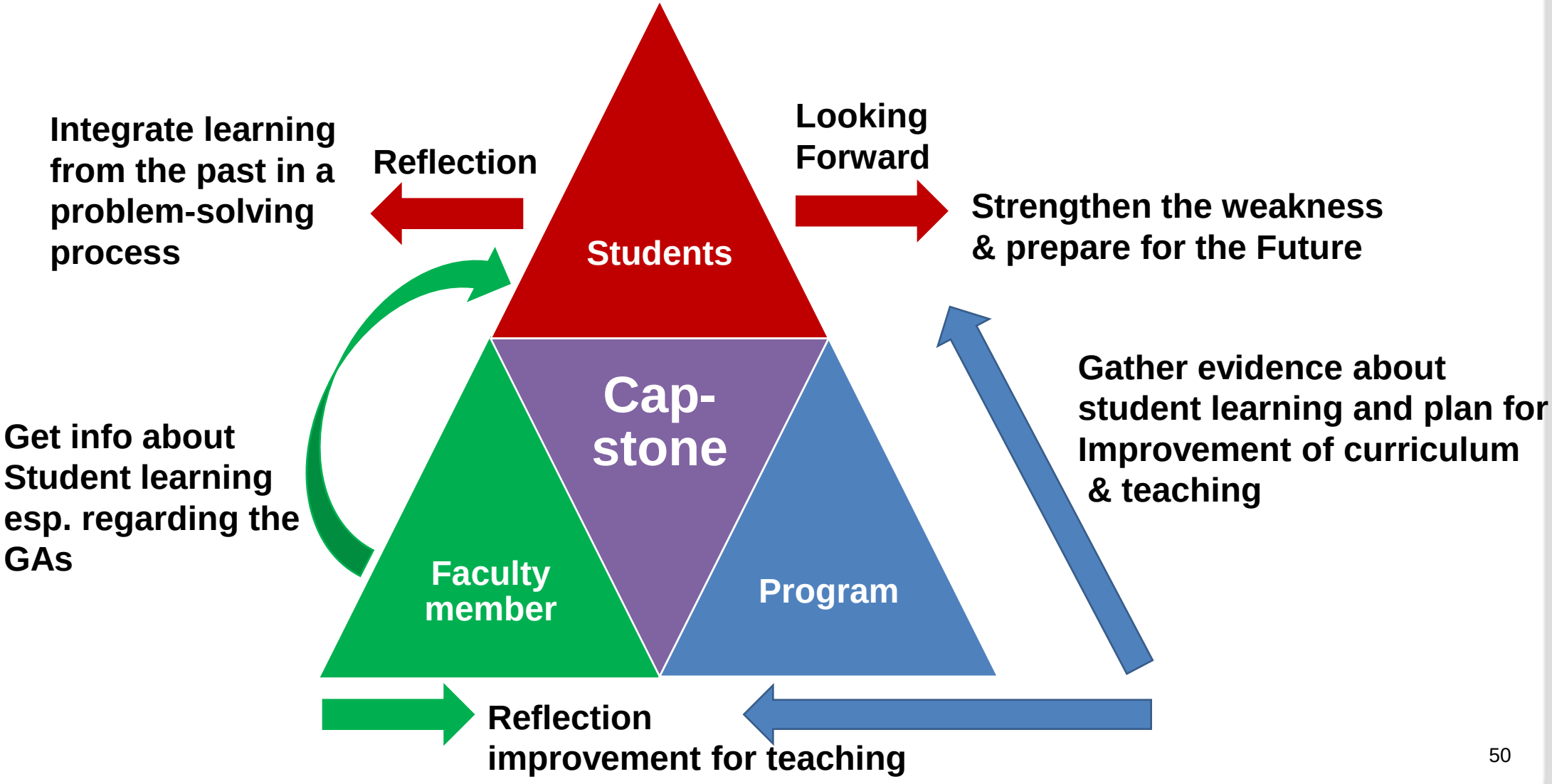
Outcomes-oriented Education & Assessment



IEET Accreditation Criteria: 8 Criteria



Capstone is the Realization of OBE



Capstone Could Assess GAs in Technical as well as Contextual Skills

Technical (Hard)

- Complex Problem Solving
- Ability to Design

Contextual (Soft)

- Teamwork, Interdisciplinary
- Communication
- Project Management (Finance)
- Life-long Learning

Capstone Should Correspond to All or Most GAs

GAs	1 ability to apply knowledge of mathematics, science, and engineering	2 ability to design and conduct experiments, as well as to analyze and interpret data	3 ability to apply techniques, skills, and modern tools necessary for engineering practice	4 ability to design an engineering system, component, or process	5 ability to manage project, communicate effectively, work in multi-disciplinary environment, and function on teams	6 ability to identify, formulate, research literature, analyze and solve complex engineering problems reaching substantial conclusions	7 knowledge of contemporary issues; an understanding of the impact of engineering solutions in the environmental sustainability, social good, and global contexts; and the ability and habit to engage in life-long learning	8 apply ethical principles and commit to professional and information ethics and responsibilities and norms of engineering practice, and a sense of respect for diversity
Core course 1	X		X					
Core course 2	X	X		X	X			
Core course 3		X	X			X		
Core course 4			X			X	X	
Core course 5				X			X	X
Core course 6					X	X		X
Capstone	X	X	X	X	X	X	X	X

Capstone is Actually
an integration of 4-6 Core Courses

Freshman		Junior		Sophomore		Senior	
Required	Elective	Required	Elective	Required	Elective	Required	Elective
Required	Required	Required	Required	Required	Elective	Requ	
Required	Required	Required	Required	Required	Elective	Required	Elective
Required	Required	Required	Req			Required	Elective
Required	Required	Required	Required	Required	Elective	Required	Elective
Required	Required	Required	Required	Required	Elective	Required	Elective
Required	Required	Required	Required	Required	Elective	Required	Elective
Requi		d	Rec		ve	Required	Elective
Required	Required	Required	Required	Required	Elective	Requ	
Required	Required	Required	Required	Required	Elective	Required	Elective
Required	Required	Required	Rec		ve	Required	Elective
Required	Required	Required	Required	Required	Elective	Required	Elective
…	…	…	…	…	…	…	…

GA	1	2	3	**4**	5	6	**7**	**8**

GA	**1**	**2**	3	**4**	**5**	6	7	8

GA	**1**	2	**3**	4	5	6	7	8

GA	1	**2**	**3**	4	5	**6**	7	8

GA	1	2	3	4	**5**	**6**	7	**8**

GA	1	2	**3**	4	5	**6**	**7**	8

Each of these core courses correspond to different Gas, and taken together, they should cover all of the GAs

Demonstration of Evidence: Capstone

(Student Work for Each Team Must be Kept for Evidence)

Student works could be in diverse forms

- Finished Product
- Prototype
- Simulations or other form (Design diagram)

Must require students to produce project report in paper/electronic form for assessment

Must require students to make oral presentation as part of the assessment plan

Could encourage students to participate in competitions

Capstone Assessment (Student Teams)

Course：Civil Engineering Capstone Project **Year：Junior (2nd Semester)**
Student：Team A/ Smart、Smith、Springfield **Topic：Design of Tamkang Bridge**

#	Graduate Attribute	Weight	Score	Total
1	ability to apply knowledge of mathematics, science, and engineering	**10%**	**90**	**9**
2	ability to design and conduct experiments, as well as to analyze and interpret data	**15%**	**80**	**12**
3	ability to apply techniques, skills, and modern tools necessary for engineering practice	**20%**	**70**	**14**
4	ability to design an engineering system, component, or process	**20%**	**90**	**18**
5	ability to manage project, communicate effectively, work in multi-disciplinary environment, and function on teams	**10%**	**80**	**8**
6	ability to identify, formulate, research literature, analyze and solve complex engineering problems reaching substantial conclusions	**8%**	**80**	**6**
7	knowledge of contemporary issues; an understanding of the impact of engineering solutions in the environmental sustainability, social good, and global contexts; and the ability and habit to engage in life-long learning; and	**10%**	**87**	**9**
8	apply ethical principles and commit to professional and information ethics and responsibilities and norms of engineering practice, and a sense of respect for diversity	**7%**	**85**	**6**
			Total	**82**

Capstone Assessment (Whole Class)

#	Graduate Attribute	Weight	Team A	Team B	Team C	Team D	Team…	Aver-age
1	ability to apply knowledge of mathematics, science, and engineering	10%	90	90	91	89	…	90
2	ability to design and conduct experiments, as well as to analyze and interpret data	15%	80	67	87	74	…	80
3	ability to apply techniques, skills, and modern tools necessary for engineering practice	20%	70	85	90	85	…	88
4	ability to design an engineering system, component, or process	20%	90	70	80	65	…	68
5	ability to manage project, communicate effectively, work in multi-disciplinary environment, and function on teams	1				65	…	72
6	ability to identify, formulate, research literature, analyze and solve complex engineering problems reaching substantial conclusions	8%	80	75	80	75	…	85
7	knowledge of contemporary issues; an understanding of the impact of engineering solutions in the environmental sustainability, social good, and global contexts; and the ability and habit to engage in life-long learning; and	10%	87	80	93	80	-	-
8	apply ethical principles and commit to professional and information ethics and responsibilities and norms of engineering practice, and a sense of respect for diversity	7%	85	78	90	85	…	86
	Team Score		82	76	86	76	…	80

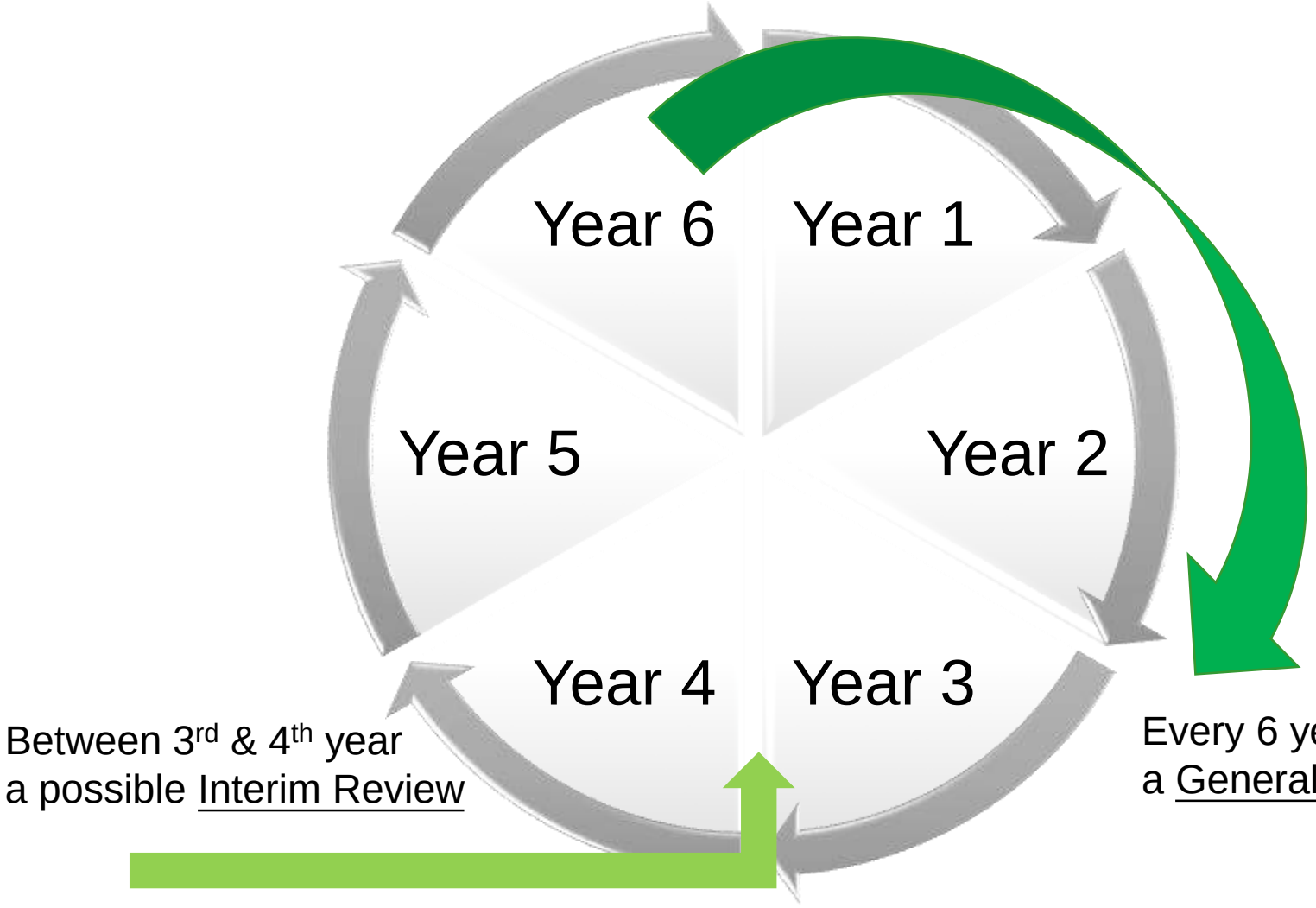
Must improve the training of GA 4 and 5

Accreditation Timeline for Programs

Sample from IEET

Month	Things to do
August	IEET publishes accreditation manual
September	Attend IEET accreditation orientation workshop
October	Programs request for accreditation + Pay the accreditation Application fee Prepare self-study report (all year long)
March	Attend IEET accreditation workshop for programs under review
July	Submit the self-study report Pay the accreditation review fee
August	Prepare onsite visit (until onsite visit)
October ~ December	IEET accreditation visit IEET team announces exit statement by end of accreditation visit Submit exit-statement reply (2 weeks after the visit)
January	IEET decision meeting
March	Receive IEET accreditation statements Pay the accreditation certification fee
May	IEET awards accreditation certificate at General Assembly
July	Submit Action Plan

6-year Accreditation Cycle



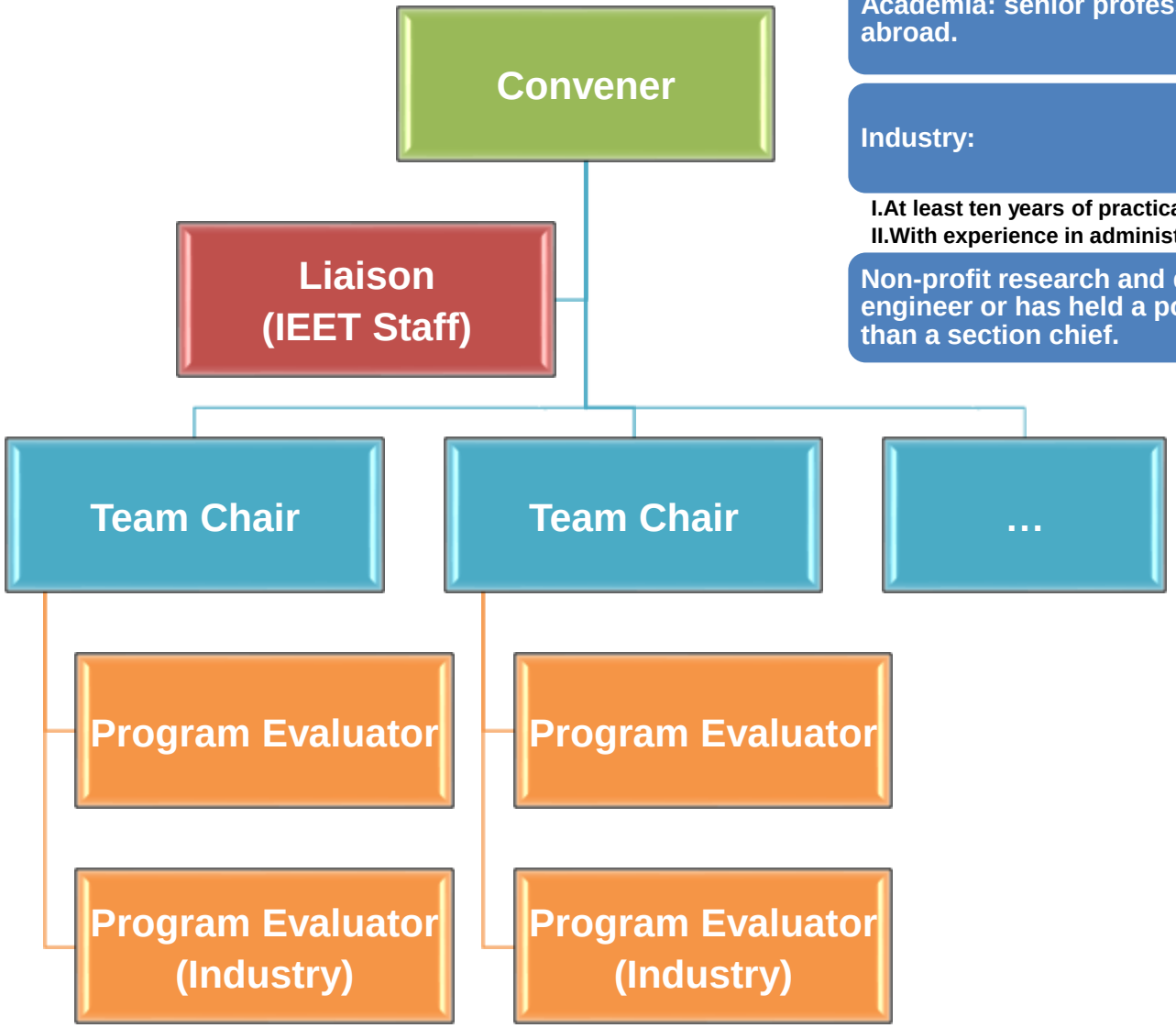
Types of Review

General Review		Interim Review	
Time	• Every 6 Years	Time	• Usually between 3rd and 4th Year within a cycle
Document Review	• Self-study Report with 6 years of data • Related documents	Document Review	• Focused report on improvement from last general review
On-site Visit	• 2 days visit	On-site Visit	• 1 day visit

Composition of Accreditation Team

Peer Review

For each program, 3-member Team



Academia: senior professor, either from Taiwan or abroad.

Industry:

I. At least ten years of practical experience in the industry.
II. With experience in administration and management.

Non-profit research and development institute: senior engineer or has held a position equivalent to or higher than a section chief.

Role of Accreditation Team Members

Team Members	Team Chairs	Team Conveners
1. Conducting each visit and interview according to the Accreditation Criteria. 2. Participating in the on-site visit in its entirety and according to the on-site visit itinerary. 3. Evaluating all supporting documents provided by the program under review. 4. The Exit Statement shall reflect program's actual merit and area for improvement; it shall be provided in written form, using language that is fair, reasonable, clear, succinct, and non-emotional, while complying with the IEET format. 5. Abiding scrupulously by the requirements of the Code of Ethics for Accreditation of Programs	In addition to the left… • Serving as the representative of the accreditation team for the program; • Chairing the on-site visit of the program; • Compiling the Accreditation Statement and Accreditation Action Recommendation	• Serving as a representative of the accreditation teams; • Gaining an in-depth understanding of the effectiveness of the administration of the university and the college; • Coordinating among the accreditation teams to ensure consistency in the review process and accreditation actions; • Compiling observation statements about the university and the college in the related sections of the Accreditation Statement. • Chairing the pre-departure meeting for the on-site visit

Training of Accreditation Teams

New Program Evaluator Training	Refresher Training	Team Chairs	Team Conveners Meeting
Brand New PEVs	Current Year PEVs	Current Year Team Chairs	Current Year Team Conveners
Half-day face to face Workshop	8 Videos can be viewed anywhere anytime	2-hr face to face updates meeting	2-hr face to face updates meeting

Online Repository of Accreditation Files

All accreditation team members must bring their own computers/pads

AMS

2024/1/10 TAC

2024/01/10 CAC

2024/01/10 AAC

2024/01/09 EAC

2024/01/10 DAC

Decision Meeting attendants of each Commission:
Commission members +
Conveners +
Team Chairs

Accreditation Actions

Accredited:

I. Next General Review: The accreditation is effective for a six-year cycle.

II. Interim Review (3 years): The accreditation is effective for three years. The accredited program must submit an interim review report and undergo an on-site visit as the basis for consideration of an effective period extension.

III. Interim Review (1 year): For a program undergoing a second cycle and beyond, if its self-study report and the supporting evidence are inadequate but do prove to have achieved the educational objectives and continuous improvement during the on-site visit, it is to be accredited for one year with a new self-study report by July 31st of and revisit due the following year with a possibility of extending the accreditation period with two years maximum.

IV. Provisionally Accredited: This action applies to a program that has yet to produce the first class of graduates under a Criteria if all else is deemed appropriate after an on-site visit. The program must notify the Council three months before the first class of graduates will be produced. The accreditation action will be issued after a review of documents on student outcomes.

Pending for Accreditation Action: The Program applies for accreditation for the first time and fails to be accredited due to insufficient supporting documents. Such a program required subsequent on-site visit within two years. The program would only be given this decision once per accreditation cycle.

Not to Accredit: A program with any noncompliance criterion will not be accredited. The Council shall notify only the program of this action without public disclosure. A "not to accredit" program may submit a new request for review a year later.

Policies for Appeal

Appeal and Review Committee shall only accept request for appeal for the following two reasons

1. Errors in procedures: Members of the accreditation team have violated policies and procedures for accreditation during the review process.
2. Errors in facts: Data and other information cited by the accreditation team are incorrect and resulted in a program receiving a “Not to Accredit” action. Should the incorrect data and information were indeed provided by the program, the program cannot request for appeal.

IEET Logo Issued to Accredited Programs

EAC

CAC

TAC

AAC

DAC

Policies for the Quality Assurance of the Accreditation of Programs

The Council and its sub-commissions adhere to the principles of transparency, objectivity, and integrity to implement accreditation of engineering and technology programs. To ensure that related work can continue to meet the needs of programs and the industry for talent capacity building, the Council establishes and implements the following internal and external continuous improvement mechanisms to maintain the quality of related work

1. OED and the various commissions hold meetings at regular intervals to reflect on outcomes of the accreditation affairs and to plan for the future.
2. Collect feedback from the programs under review as well as the other stakeholder groups as the basis for consideration of future adjustments of the accreditation system.
3. Be reviewed by national and international bodies at regular intervals to maintain the quality of the accreditation system. Issues identified as weaknesses from the reviews must be considered and resolved after each review.
4. The accreditation manual must be reviewed and considered for adjustment at least once every two years, together with feedback from the stakeholders. The revisions should be published after a period of public comments.
5. In addition to performing relevant work in accordance with the Code of Ethics for the Accreditation of Programs, members of the Council, the sub-commissions, and OED must also receive regular training on the latest information of the accreditation to ensure the quality of related work.

Thank You