ワシントン協定とJABEE

JABEE国際部顧問（前専務理事）

青島泰之

日本工学会・日本技術者教育認定機構共催
特別公開フォーラム「我が国の技術系人材の育成を考える」
2024年11月30日

Engineering Education

- Engineering is the most advanced field in the quality assurance of professional education
- In Western countries, historically, professional societies, such as an institution of professional engineers, have been conducting the accreditation of education to ensure that the next generation will acquire required ability and knowledge when they have graduated from the engineering study program
- In those countries, only graduates from accredited programs are eligible to be professional engineers

Washington Accord

- Established in 1989 by 6 accreditation bodies for engineering education

  ABET (USA)
  Engineers Canada
  Engineering Council of United Kingdom
  Engineers Australia
  Engineers Ireland
  Engineering New Zealand

- As in 2024, there are 25 signatories and 6 provisional members

Washington Accord membership

ABET (USA)
Engineers Canada
ECUK (UK)
EA (Australia),
EI (Ireland)
EngNZ (New Zealand)

Accreditation Bodies	Provisional Status	Signatory
6 Founding Members		1989
HKIE (Hong Kong)	No system at that time	1995
ECSA (South Africa)	1994	1999
JABEE (Japan)	2001	2005
IES (Singapore)	2003	2006
BEM (Malaysia)	2003	2009
ASIIN (Germany)	2003 but was removed in 2013	
ABEEK (RP Korea)	2005	2007
IEET (Chinese Taipei)	2005	2007
AEER (Russia)	2007	2012
NBA (India)	2007	2014
IESL (Sri Lanka)	2007	2014
MUDEK (Turkey)	2010	2011
PEC (Pakistan)	2010	2017
IEB (Bangladesh)	2011	2024
CAST (PR China)	2013	2016
PTC (The Philippines)	2013	2024
ICACIT (Peru)	2014	2018
CFIA (Costa Rica)	2015	2020
CACEI (Mexico)	2016	2022
ACREDITA CI (Chile)	2018	
PII (Indonesia)	2019	2022
COE (Thailand)	2019	
MEC (Myanmar)	2019	
ETEC (Saudi Arabia)	2022	
COREN (Nigeria)	2023	
IEM (Mauritious)	2024	

- WA members accredit study programs with “similar” criteria (NOT with same criteria)
- Graduate Attributes (GA)

1	Engineering knowledge
2	Problem Analysis
3	Design / Development of Solutions
4	Investigation
5	Modern Tool Usage
6	The Engineer and Society
7	Environment and Sustainability
8	Ethics
9	Individual and Team Work
10	Communication
11	Project Management and Finance
12	Life Long Learning

Substantial Equivalency

- Programs accredited by WA signatories are recognized under the WA as substantially equivalent
- WA, however, does not recognize the substantial equivalency of oversea accreditation

- “Oversea Accreditation” means accreditation conducted by foreign agencies
- Foreign agencies use their accreditation criteria which only reflect the needs of theirs, but not the needs of other countries

Paradigm shift from input-based teaching to outcomes-based learning

- In the 2000's, ABET (USA) drastically changed its evaluation method from input base to outcomes base. ABET triggered the world paradigm shift of engineering education from input-based teaching to outcomes-based learning. The Washington Accord adopted OBE methods for evaluation
- Study programs shall set up learning outcomes, taking into consideration what students shall acquire rather than what professors wish to teach

Shortcoming of Japanese Engineering Education identified by WA verification review team in 2004

Most Japanese engineering education is rooted in applied science. As a result, most Japanese engineering programs emphasize the learning of relevant scientific principles more than the application of those principles in a design context. The fourth year of such programs, for example, usually consists of a research project directed by a faculty member who joins the fourth-year students with his or her graduate students. This experience often lacks significant design content, leading the Japanese industries who employ new engineering graduates to accept the responsibility of training those new employees to perform engineering design.

In addition, Japanese faculty and students have long valued the freedom of each student to select a course of study and research that meets their individual educational objectives, leading to great flexibility in course selection within a typical student's years of study.

These two factors combine to make Japanese engineering education somewhat different from that found in many of the WA countries, although the end result is clearly a highly educated engineering graduate with excellent experience in research, although probably with little hand-on engineering design experience.

Comments made by WA periodic review team in 2012

- Recognized the improvement on Engineering Design Education
- “Multi-disciplinary” team work is not sufficient
- Internationalization (foreign students and teachers) not yet sufficient
- Education of communication skills in English not yet sufficient
- More industry’s participation to JABEE activities should be encouraged

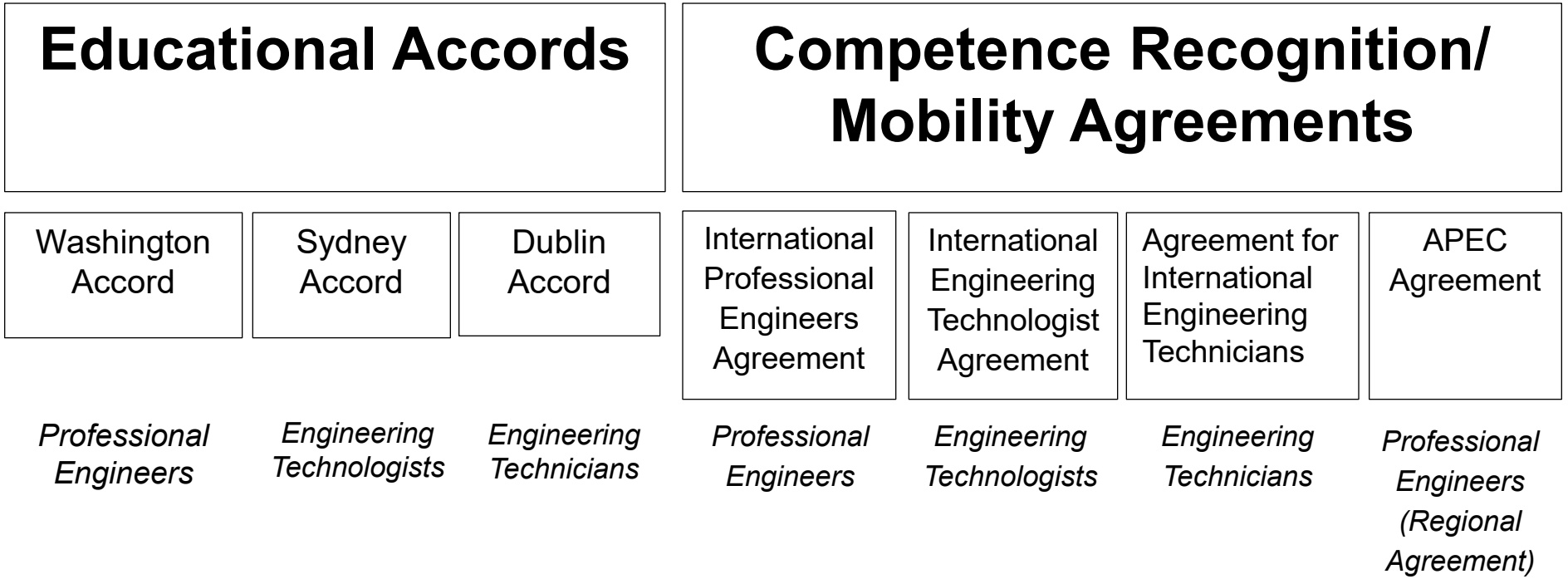
Comments made by WA periodic review team in 2017

- Recognized JABEE’s flexible application of “Multi-disciplinary” team work in the Accreditation Criteria and in the Criteria Guide
- Evaluation of quality of program evaluators is not systematic

Comments made by WA periodic review team in 2024 ???

International Engineering Alliance

https://www.ieagreements.org



JABEE's Assistance to Indonesia 2013-2023

- JICA Technical Cooperation project for IABEE (Indonesian Accreditation Board for Engineering Education) 2014-2023
- Japan's ODA to Indonesia
- The Indonesian Government requested the Japanese Government to assist Indonesia to establish an international level accreditation body for engineering education

How JABEE mentored IABEE

- Establish IABEE
- Develop accreditation criteria
- Develop program evaluation procedure and instruments
- Train IABEE experts in different countries (as evaluator trainers)
- Train evaluators in Indonesia
- 52 seminars for socialization to education institutions
- 26 consultation services to the education institutions
- 99 engineering programs accredited
- Provisional status in the WA in 2019
- Signatory status in the WA in 2022
- Signatory status re-affirmed and full privileges granted
- 29 JABEE exerts were mobilized for JICA project