Indonesian Accreditation Board for Engineering Education (IABEE)

International-level Accreditation for Engineering and Computing Programs in Indonesia

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Awareness Seminar
Kampus Universitas Udayana
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Outline

- About IABEE
- International Engineering Alliance (IEA) & International Agreements
- OBE as A Platform for International Level Accreditation
- IABEE Accreditation & Criteria
- Program Eligibility
- Accreditation Procedure & Online Evaluation System
- IABEE Services and Supports
- Towards IABEE Accreditation

About IABEE

- An accreditation agency for engineering and computing higher education programs
- IABEE is not a LAM-PS. IABEE accreditation is voluntary, unlike the mandatory accreditation by LAM-PS
- Accreditation is a means to improve quality of higher education and accountability to the society by implementing OBE
- Currently in the process of applying for the provisional status of the Washington Accord (WA) in 2019
- WA is a multilateral agreement between the institutions responsible for engineering higher education accreditation that works together to help the mobility of engineering practitioners
- WA requires that the accreditation body must be independent of the government (NGO)
- Therefore, IABEE is established as an autonomous department within the Institution of Engineers Indonesia (PII)
- IABEE was initiated by DGHE with the support from JICA
- Declared in November 19, 2015; inaugurated in March 13, 2018

IABEE Organization Structure

IABEE Executive Committee

- Prof. Misri Gozan, professor in chemical engineering at UI, Chair of Executive Committee
- Prof. Muhammad Romli, professor in agroindustrial engineering at IPB, Chair of International Affairs Committee
- Prof. Satryo Soemantri Brodjonegoro, emeritus professor in mechanical engineering at ITB, former Chair of Executive committee
- Prof. Sudjarwadi, emeritus professor in civil engineering at UGM, Chair of Criteria Committee
- Prof. Tresna P. Soemardti, professor in mechanical/biomechanical, product innovation, design, prototyping and development at UI
- Prof. Siti Hartati, professor in computer science at UGM
- Dr. Heru Dewanto, President of PII
- Ir. Faizal Safa, Executive Director of PII
- Ir. Tjipto Kusumo, PII Chair of CPD, Chair of Finance Committee
- Dr. Arief Syaichu Rohman, ITB, Chair of Evaluation and Accreditation Committee
- Berlian Kushari, UII, Secretary General

IEA & International Agreements
IEA is an umbrella organization for 7 international agreements which establish and enforce amongst their members internationally-benchmarked standards for engineering education and what is termed “entry level” competence to practice engineering and professional competence.

**International Engineering Alliance (IEA) and WA**

“How do we build mutual understanding among nations about the quality of engineers who enter the globally connected workplace?”

George Peterson, WA Secretariat
2001-2007

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### IEA Graduate Attributes

- 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.
- Graduate attributes are clear, succinct statements of the expected capability, qualified if necessary by a range indication appropriate to the type of program.
- The IEA Graduate Attributes are intended to assist Signatories and Provisional Members to develop outcomes-based accreditation criteria for use by their respective jurisdictions.

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### Educational Accords and Competence Recognition/Mobility Agreements

<table>
<thead>
<tr>
<th>Educational Accords</th>
<th>Competence Recognition/Mobility Agreements</th>
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<tbody>
<tr>
<td>Washington Accord</td>
<td>International Engineering Technology Agreement</td>
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<tr>
<td>Sydney Accord</td>
<td>International Engineering Technicians Agreement</td>
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<tr>
<td>Dublin Accord</td>
<td>International Engineering Technicians (Agreement)</td>
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<tr>
<td>IPEA</td>
<td>APEC Agreement: standard competencies for professional engineer</td>
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<tr>
<td>APEC Economies</td>
<td>Engineer</td>
</tr>
<tr>
<td>IETA</td>
<td>Technologist</td>
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<tr>
<td>AIET</td>
<td>Technicians</td>
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</tbody>
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### Education: First Step To Professional

“The education stage is followed by a period of supervised training while gaining experience in engineering practice.”

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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
means that two programs, while not meeting a single set of criteria, are both acceptable as preparing their respective graduates to enter formative development toward registration.

**Substantial Equivalence and WA**

**Process to be a Professional Engineer:**

**Japan Case**

**WA Membership**

- Basis of agreement of the Washington Accord (WA): substantially equivalent accreditation systems leading to recognition of substantial equivalence of programs in satisfying academic requirements for the practice of engineering at professional level
- Graduates of accredited programs in any signatory country are recognized by the other signatory countries as having met the academic requirements for entry to the practice of engineering
The Seoul Accord

- Computing and IT related fields are classified as a different category of profession from engineering.
- The Seoul Accord was established in 2008 as a multi-lateral agreement among agencies responsible for accreditation or recognition of tertiary-level computing and IT-related qualifications.
- ABEEK (Korea), ABET (USA), JABEE (Japan), Australian Computer Society, British Computer Society and Canadian Information Processing Society are the founding members. The first 3 are signatories of the WA and the last 3 are computer societies.
- The Hong Kong Institution of Engineers (HKIE) and the Institution of Engineering Education Taiwan (IEET), which are both signatories of WA joined the Seoul Accord latter. Engineers Ireland, Institute of IT Professional New Zealand and The Philippine Information and Computing Accreditation Board are provisional members.

IABEE Preparation for WA Membership

Outcome-Based Education (OBE)

- An educational philosophy/model where the teaching and learning approaches are based on a set of "expected outcomes" that have been previously set.
- "Outcomes" are a set of values or attributes about what must be achieved/mastered by students after completing a certain level of learning.
- Educational system platform for international level accreditation
Why OBE?

- The need for **quality** and **accountable** education, because the funds come from the community
- Accountability is indicated by the quality of **graduates** and **knowledge** for the welfare of society
- The community must know the performance of the university; accreditation provides **objective** information
- In global competition, **mutual recognition** plays an important role in increasing competitiveness
- OBE provides a mechanism for objective international recognition

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**OBE Approach**

- **vision, mission**
- **Program Educational Objectives**
- **Graduate Outcomes**
  - Course-1 Outcomes
  - Course-2 Outcomes
  - Course-n Outcomes

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**4 principles**

- Focus on learning outcomes
- Deliver forward-design backward curriculum
- Constructive alignment
- Expanded learning opportunities
Tujuan Pendidikan Program

- Istilah lain: Program Educational Objectives (PEO); Profil Profesional Mandiri
- Pernyataan yang menjelaskan pencapaian kualitas spesifik yang diharapkan dari lulusan setelah beberapa tahun berkarir dalam profesi
- Diukur 3-5 tahun setelah bekerja
- Bersifat spesifik untuk setiap program

Capaian Pembelajaran Program

- Istilah lain: Program Outcomes (PO); Program Learning Outcomes (PLO); Student Outcomes (SO); Capaian Pembelajaran Lulusan (CPL)
- Deskripsi serangkaian kualitas atau atribut lulusan yang diharapkan diketahui, dapat dilakukan, dan dicapai pada saat mahasiswa lulus, sebagai modal untuk mencapai PEO
- Kualitas atau atribut tersebut mencakup aspek pengetahuan (kognitif), ketrampilan (skill/psikomotorik), dan sikap/perilaku (behaviour/afektif) yang diperoleh mahasiswa selama program pembelajarannya

Capaian Pembelajaran Mata Kuliah

- Istilah lain: Course Outcome (CO); CPMK
- Aspek-aspek teknis atau soft skills yang harus dikuasai atau dicapai oleh setiap mahasiswa pada saat menyelesaikan suatu mata kuliah
- CPMK dirancang untuk mendukung CPL
- Bersifat spesifik untuk suatu mata kuliah
- Bersifat terukur
Kurikulum

- Body of knowledge
- Struktur Kurikulum
- Mata kuliah
- Pendekatan pengajaran dan pembelajaran
- Asesmen

Penyelarasan Konstruktif

sistem mendukung
kesempatan belajar yang luas
agar tujuan pembelajaran tercapai
Added Value Concept

Entry level spectrum

Program path

Targeted achievement S1 program

Exit level spectrum

4 years duration

QUALITY ASSURANCE

SEMUA MAHASISWA HARUS MEMENUHI CAPAIAN PEMBELAJARAN YANG DITETAPKAN

DESIGN!

IABEE Accreditation & Criteria
### Engineering Program Accreditation

**BAN PT**
- Compulsory
- Input-based evaluation
- One size fits all criteria
- Ranking system
- National level

**IABEE**
- Voluntary
- Outcome-based
- Field specific criteria
- No ranking
- International level
- Continual improvement

### IABEE Accreditation Principles

- Voluntary, *internally driven* (program attitude towards quality); and therefore accreditation is not the purpose, rather a means for improvement
- Accreditation is based on *Learning Outcomes*, which is self-determined by the program according to the vision, identity and uniqueness, resources, and user needs; and therefore accreditation is not to rank nor to compare among programs
- International *equivalency* (*IEA graduate attributes*)
- *Third-party* evaluation (independent, autonomous, NGO)
- *Accountable* to society (*outcome-based*, answering the need of stakeholders)

### Concept of OBE Accreditation

- Designed learning outcomes to be achieved
- Actual knowledge and abilities of the graduates
- Required level by the society

### Importance of IABEE Accreditation

- **For students and graduates**
  - Gain *education basics* that meet global standards, in line with science and technology development, support career and professional success, and wider employment opportunities
- **For programs and education institutions**
  - By voluntary nature, programs demonstrate a *commitment* to provide quality education and global recognition.
- **For industry, government and stakeholders**
  - Opportunity to provide *feedback* on employment needs, facilitate professional *mobility*, more *accountable* to the community.
IABEE Accreditation Criteria

To be accredited, a program shall meet

- Accreditation Criteria
  - Common Criteria
  - Criteria Guide
  - Discipline Criteria (13/19 Chapters of PII)
  - Category Criteria (S1, S2 and S3)
- Rule and Procedure of Evaluation and Accreditation

IABEE Common Criteria

- Continual improvements based on LOs evaluation (4.1)
- Documents, records, and improvements are maintained (4.2)
- Entry requirements (2.3) are defined & announced
- Curriculum (2.3)
  - Faculty (2.7)
  - Students & academic atmosphere (2.3)
  - Facility (2.4)
  - Institutional responsibility (2.5)
- Students & teaching-learning process
- Graduates
- Autonomous Professional Profile
- Learning Outcomes are established based on the envisaged APP, General Criteria requirements (1.3.1 and 1.3.2), and Discipline Criteria (1.3.3).
  - Performance indicators, assessment plan and method are defined for each LO (1.3.3).
  - LOs attainment is measured (3.1) and assured for the graduates (3.2)
- Envisaged APP is defined (1.1) and inform to all faculty, students, and general public (1.2)

IEA Graduate Attributes vs IABEE Learning Outcomes Criteria (a)–(j)

<table>
<thead>
<tr>
<th>IEA GA</th>
<th>IABEE Criterion</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Engineering Knowledge</td>
<td>1.3 a</td>
</tr>
<tr>
<td>2 Problem Analysis</td>
<td>1.3 d</td>
</tr>
<tr>
<td>3 Design/development of solutions</td>
<td>1.3 b</td>
</tr>
<tr>
<td>4 Investigation</td>
<td>1.3 c</td>
</tr>
<tr>
<td>5 Modern Tool Usage</td>
<td>1.3 e</td>
</tr>
<tr>
<td>6 The Engineer and Society</td>
<td>1.3 i</td>
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<td>7 Environment and Sustainability</td>
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<tr>
<td>8 Ethics</td>
<td>1.3 i</td>
</tr>
<tr>
<td>9 Individual and Team work</td>
<td>1.3 h</td>
</tr>
<tr>
<td>10 Communication</td>
<td>1.3 f</td>
</tr>
<tr>
<td>11 Project Management and Finance</td>
<td>1.3 g</td>
</tr>
<tr>
<td>12 Life long learning</td>
<td>1.3 j</td>
</tr>
</tbody>
</table>
IABEE Discipline Criteria for Engineering

- Chemical, biochemical, biomolecular and similarly named eng. programs
- Environmental eng. and similarly named eng. programs
- Ocean eng. and similarly named eng. programs
- Agricultural and/or biosystem eng.
- Civil eng. and similarly named eng. programs
- Electrical, computer, communications, telecommunication eng. and similarly named eng. programs
- Engineering physics and similarly named eng. programs
- Geodetic, geomatics eng.
- Industrial eng. and similarly named eng. programs
- Materials, metallurgical eng. and similarly named eng. programs
- Mechanical eng.
- Nuclear eng. and similarly named eng. programs

IABEE Discipline Criteria for Computing

- Computer science / informatics and similarly named programs
- Information systems and similarly named programs
- Information technology and similarly named programs
- Software engineering and similarly named programs
- Computer systems and similarly named programs

Program Eligibility
Accreditation Types

- **General Accreditation**, intended for programs that have implemented outcome-based education system and at the time of the evaluation process has produced graduates with the system
  - A-accredited program; min B-accredited institution
- **Provisional Accreditation**, intended for programs that have implemented outcome-based education system and at least the first year students have completed learning with the system.
  - Min B-accredited program and institution

Is Your Program Eligible to Apply?

<table>
<thead>
<tr>
<th>General Accreditation</th>
<th>Provisional Accreditation</th>
</tr>
</thead>
</table>
| (1) The associated Program Operating Institution (POI) has obtained National Accreditation for Institution status with a minimum rank of “B”.
| (1) The associated Program Operating Institution has obtained National Accreditation for Institution status with a minimum rank of “B”.
| (2) The Program has obtained National Accreditation status ranked “A”.
| (2) The Program has obtained National Accreditation status at least ranked “B”.
| (3) The Program is a bachelor level program in an engineering or computing discipline with a curricular study period of four years, and with a total course load of a minimum of 144 credit units.
| (3) The Program is a bachelor level program in an engineering or computing discipline with a curricular study period of four years, and with a total credit of a minimum of 144 credit units.
| (4) The Program is at least in the 4th year of continuous Outcome-Based Education (OBE) implementation.
| (4) The Program has implemented Outcome-Based Education (OBE) at least for one year before applying for the evaluation.
| (5) The OBE shall include assessment and evaluation of the Learning Outcomes of the students.
| (5) The Program has established and publicized the Autonomous Professional Profile statement formulated as its educational objectives.
| (6) By the time of the on-site visit evaluation, the Program has produced at least one graduate under its OBE system.
| (6) The Program has established and publicized its Learning Outcomes as the basis for developing its curriculum and learning methods.
| (7) The Program has established and publicized the Autonomous Professional Profile statement formulated as its educational objectives.
| (8) The Program has established and publicized its Learning Outcomes as the basis for developing its curriculum and learning methods.

Accreditation Procedure & Online Evaluation System
**Evaluation Team**

- Consists of 3 evaluators, typically
  - 2 academics
  - 1 industry/practitioner
  - (optional) observers: evaluator-in-training, interested parties

- Evaluator competence
- Ethics (evaluator code of conduct)
- Conflict of interest

**Online Evaluation System**

- Image of online evaluation system

**Online Self-Evaluation Report**

- Image of online self-evaluation report

**Evaluation for General Accreditation**

- Image of evaluation criteria

- Criteria:
  1. profil lulusan
  2. profil profesional mandiri
  3. CP prodi
  4. mahasiswa & akademik
  5. fasilitas
  6. tanggap jawab institusi
  7. CP prodi efektif
  8. CP prodi terpenuhi
  9. evaluasi & perbaikan pemeliharaan dokumen

- Your program will be judged against each of these 12 criteria
- Four possible judgments for each criterion: (A)ceptable, (C)oncern, (W)eakness, or (D)eficiency
- Your program will be accredited if there is no “D”
- 5-year accreditation (full) will be granted if your program receives “A” or “C” judgments
- 2-year accreditation (interim) will be granted if your program has “W” (improvement report and evaluation required)
General Accreditation Decision

- Accredited for a 5-year period
- Accredited for a 2-year period, followed by interim evaluation without site visit
- Accredited for a 2-year period, followed by interim evaluation with site visits
- Not accredited

Evaluation for Provisional Accreditation

<table>
<thead>
<tr>
<th>Criteria</th>
<th>• A program applying for PA will be evaluated to measure its potentials of meeting the Accreditation Criteria within a foreseeable future (2-4 years).</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.1. profil lulusan</td>
<td>• Potential programs will be granted a “Provisionally Accredited” status</td>
</tr>
<tr>
<td>1.2. profil profesional mandiri</td>
<td>• Non-potential programs will be given a “Not Accredited” status</td>
</tr>
<tr>
<td>1.3. CP prodi</td>
<td></td>
</tr>
<tr>
<td>2.1. kurikulum</td>
<td></td>
</tr>
<tr>
<td>2.2. dosen</td>
<td></td>
</tr>
<tr>
<td>2.3. mahasiswa &amp; akademik</td>
<td></td>
</tr>
<tr>
<td>2.4. fasilitas</td>
<td></td>
</tr>
<tr>
<td>2.5. tanggung jawab institusi</td>
<td></td>
</tr>
<tr>
<td>3.1. CP prodi efektif</td>
<td></td>
</tr>
<tr>
<td>3.2. CP prodi terpenuhi</td>
<td></td>
</tr>
<tr>
<td>4.1. evaluasi &amp; perbaikan pemeliharaan dokumen</td>
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IABEE Services

<table>
<thead>
<tr>
<th>Training/seminar</th>
<th>Topics</th>
<th>Schedule</th>
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</thead>
<tbody>
<tr>
<td>IABEE Awareness Seminar</td>
<td>About IABEE, introduction to OBE, IABEE Accreditation criteria and system</td>
<td>Surabaya: 12/2 Palembang: 14/2 Jakarta: 14/2</td>
</tr>
<tr>
<td>IABEE Evaluator Training</td>
<td>on-line module, face-to-face training, observer (evaluator in training)</td>
<td>Juli – Agustus 2019</td>
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Outcome-based Education Training (1)

<table>
<thead>
<tr>
<th>Training</th>
<th>Topics</th>
<th>Schedule</th>
</tr>
</thead>
<tbody>
<tr>
<td>PRIORITIES (Program for Redesigning and Implementing Outcomes-based Curriculum, Teaching-Learning-Assessment and Evaluating Systematically)</td>
<td>OBE, learning outcomes, curriculum design, teaching and learning, assessment methods, change management, and outcome-based quality assurance system.</td>
<td>Jakarta: 12-15/3 2019, Yogya: 9-12/4 2019, Surabaya:</td>
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<table>
<thead>
<tr>
<th>Training</th>
<th>Topics</th>
<th>Schedule</th>
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<tbody>
<tr>
<td>Regular Training (4 hari)</td>
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Outcome-based Education Training (2)

<table>
<thead>
<tr>
<th>Training</th>
<th>Materi</th>
<th>Jadwal</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Pengantar Pendidikan berbasis Capaian Pembelajaran (Outcome-based Education) untuk pimpinan PT.</td>
<td>konsep, dan prinsip OBE, sistem pengelolaan dan penjaminan mutu OBE</td>
<td>4 jam, tempat: menyesuaikan lokasi PT</td>
</tr>
<tr>
<td>2. Pengantar Pendidikan berbasis Capaian Pembelajaran untuk pimpinan program, penjaminan mutu dan dosen</td>
<td>Konsep OBE, Capaian pembelajaran, redesain kurikulum dan asesmen.</td>
<td>1.5 hari, tempat: menyesuaikan lokasi PT</td>
</tr>
<tr>
<td>3. Desain Kurikulum berbasis Capaian Pembelajaran (Outcome-based Curriculum)</td>
<td>tujuan pendidikan, capaian pembelajaran, redesain kurikulum</td>
<td>2 hari, tempat: menyesuaikan lokasi PT</td>
</tr>
<tr>
<td>4. Desain Pembelajaran dalam OBE (Outcome-based Teaching-Learning)</td>
<td>konsep dan implementasi pembelajaran aktif dalam sistem OBE</td>
<td>2 hari, tempat: menyesuaikan lokasi PT</td>
</tr>
<tr>
<td>5. Desain Asesmen dalam OBE (Outcome-based Assessment)</td>
<td>konsep dan metode asesmen capaian pembelajaran (tingkat MK dan Program studi)</td>
<td>2 hari, tempat: menyesuaikan lokasi PT</td>
</tr>
<tr>
<td>6. Capstone Course/Design</td>
<td>definisi, tujuan dan konsep serta contoh capstone course, sesuai program studi</td>
<td>2 hari, tempat: menyesuaikan lokasi PT</td>
</tr>
</tbody>
</table>

Candidate Evaluator Training

- Application
- Eligibility Check
- Online Module Training
- Performance Evaluation
- Face-to-Face Training
- Performance Evaluation
- Assignment as Observer
- Performance Evaluation
- Performance Evaluation
- Evaluator Appointment

Towards IABEE Accreditation
Possible strategy for preparing your program towards IABEE accreditation (fast option)

1. Learn IABEE Common & Discipline Criteria, RPEA
2. General review of your curriculum & education system
3. OBE+PDCA design
4. Staff conditioning
5. Implement OBE + PDCA
6. Recruit new students
7. Measure & assess PLOs development
8. Apply Provisional Accreditation to IABEE (optional)
9. Apply General Accreditation to IABEE

Assumption: your program has just considered to adopt OBE in 2019

IABEE Website

Mohon Peserta Mengisi Form Evaluasi https://goo.gl/yUpvej