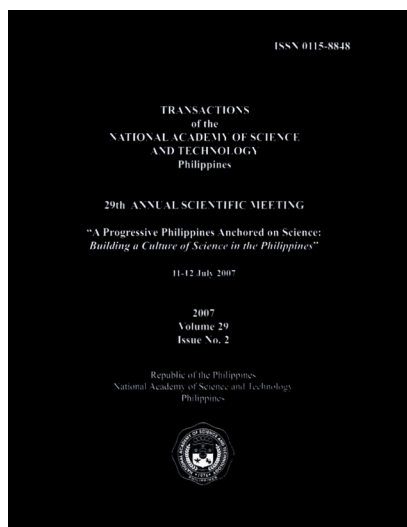


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## The Importance of Accreditation of Engineering Programs to the Global Practice of the Profession

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National Academy of Science and Technology and  
Mapua Institute of Technology

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## **The Importance of Accreditation of Engineering Programs to the Global Practice of the Profession**

**Reynaldo B. Veal**

Engineering Sciences and Technology Division  
National Academy of Science and Technology and  
Mapua Institute of Technology

An aspect of globalization is the free movement of professionals and of services across national boundaries. In the worldwide community of engineers, greater mobility is being sought through the internationalization of engineering education and the mutual recognition of professional qualifications.

*“Substantially equivalent engineering degree programs”* is the phrase often used to characterize engineering education systems adhering to common standards. Graduates coming from substantially equivalent programs in different countries are assumed to have basically the same competencies and can therefore enter into the practice of the profession across countries more easily.

The **Washington Accord of 1989** is one such effort to internationalize engineering education. The signatories to this Accord agree that an engineering degree program accredited by one member country is substantially equivalent to an engineering degree program in the same field accredited by another member country. As a consequence, graduates of nationally-accredited engineering programs are exempted from the educational requirements for practicing in any of the other signatory countries.

The International Professional Engineer (IntPE) Register accepts individual members exclusively from countries which are members of the Washington Accord. More specifically a prospective member must have graduated from a program that has been accredited under the terms of the Washington Accord. This makes it important and urgent for the Philippines thus to become a member of the Washington Accord.

This panel discussion aims to clarify the Philippines' present situation and the steps necessary to move towards membership in the Washington Accord.

## **Accreditation**

Enrico C. Nera, ASEAN Eng., APEC Eng.  
President, Philippine Technological Council  
Chairman, Governing Board, ASEAN Federation of Engineering  
Organizations

Accreditation is a process by which a facility's services and operations are examined by a third-party accrediting agency to determine if applicable standards are met. Should the facility meet the accrediting agency's standards, the facility receives accredited status from the accrediting agency.

### **Aims addressed by Accreditation**

- Security and protection of profession
- Mobility and transparency -- international recognition
- Reduces cost by increasing efficiency
- Compatibility
- Stability
- Stimulates improvement and Quality Assurance schemes

### **Global Impact of Accreditation**

- Global Professional Mobility
- Mutual Recognition Agreements
- Assistance in the Development of Accreditation Process and Systems
- Substantial Equivalency Evaluations

### **Issues in the Philippines**

- Present Accreditation systems
  - Institution based accreditation
  - Self accreditation by associations of HE
  - Fragmented/sectoral
- 12 different engineering laws
- 12 different engineering professional organizations
- Program based certification by CHED-TPETA

### **Recommendations**

The accreditation body should consist of 4 sectors namely government, HEIs, POs and industries.

## **The Washington Accord (WA)**

**Conrado Navalta**

Director, Continuous Quality Improvement Office, MIT

- WA was signed in 1989
- An agreement between the bodies responsible for accrediting professional engineering degree programs in each of the signatory countries
- It recognizes the substantial equivalency of programs accredited by those bodies
- It recommends that graduates of accredited programs in any of the signatory countries be recognized by the other countries as having met the academic requirements for entry to the practice of engineering

### **Scope**

- Covers professional engineering undergraduate degrees
- Does not cover engineering technology and postgraduate-level programs
- Does not cover professional engineering designations such as Chartered Engineer
- Only qualifications awarded after the signatory nation became part of the Accord are considered

### **Admission Requirements**

- An application for provisional membership supported by nominations from two of the existing signatories
- A positive vote by at least two-thirds of the existing signatories
- A prescribed period of provisional status (normally 2 years) during which the accreditation criteria and processes established by the applicant, and the manner in which those procedures and criteria are implemented, will be subject to comprehensive examination by a review team
- Unanimous approval of the existing signatories for transition from provisional status to signatory status

### **General Characteristics**

#### **Important Notes:**

- The signatories to the WA shall be authorities, agencies or institutions which are representative of the engineering profession and which have statutory powers or recognized professional authority for accrediting programs designed to satisfy the academic requirements for admissions to the profession within a

defined jurisdiction (e.g., country, economy, geographic region). Any such authority, agency or institution must be independent of the academic institutions delivering accredited programs within their jurisdiction.

## **ISSUES and CONCERNS**

What is the responsible agency responsible for the signatories to the WA? PTC is not accrediting agency and has no track record. PAASCU and PACUCOA must be independent of the academic institutions delivering accredited programs within their jurisdiction.

### **AASCU Accreditation of Engineering Programs**

#### **Concepcion Pijano**

Executive Director, PAASCU

Philippine Accrediting Association of Schools, Colleges and Universities (PAASCU) is an accrediting agency for private sector since 1957.

#### **Higher Education Programs Accredited by PAASCU**

- Chemical Engineering
- Civil Engineering
- Computer Engineering
- Electrical Engineering
- Electronics and Communications Engineering
- Industrial Engineering
- Mechanical Engineering

#### **Institutions with Accredited Engineering Programs**

- 24 Higher Education Institutions
- 76 programs
  - 12 – Level I accredited programs
  - 42 – Level II accredited programs
  - 22 – Level III accredited programs

**May 18, 2007 – PAASCU Board creates a Committee to work on its application for the Washington Accord**

**July 4, 2007 – The Committee meets for the 1st time and decides to recommend the following to the PAASCU Board in its August 3, 2007 meeting**

1. Creation of a Commission on Engineering Education (CEE) within

- PAASCU, similar to the Commission on Medical Education.
2. Creation of a Board of Advisers that would work in tandem with the CFE. Three eminent industry practitioners who are experts in the various fields of engineering will be invited to serve as advisers.
  3. Revision of the Survey Instrument for Accrediting the Engineering Programs

## **ISSUES and CONCERN**

Joint Statement of the European Networks for the Accreditation of Chemistry-, Engineering-, Informatics- and Medical Study Programmes  
They commit themselves to apply for membership to the European Association for Quality Assurance in Higher Education (ENQA) and to apply for registration in the envisaged European Register for Quality Assurance Agencies. This will affect the plan of the Philippines for a membership in Washington Accord.

## **Infusing Outcomes-Based Assessment to Current PACUCOA ACCREDITATION PROCESSES**

Philippine Association of Colleges and Universities Commission on Accreditation (PACUCOA) is an accrediting agency for a private sector. It was incorporated in 1988. PACUCOA was approached by PACU to consider the inclusion of program outcome assessment in the engineering instrument so that the Philippines through an accrediting body will qualify for membership to the Washington ACCORD.

**The proposed accreditation process, involves three major components:**

Part I- shall require an engineering program to undergo a self survey or self evaluation. This component consists of specific provisions on policies, guidelines and practices.

An enhanced instrument that includes components of a program outcomes assessment that comply with CHED-CMO shall be used. The format follows the current engineering instrument. The sections on purposes and objectives, instruction and community development, and organization and administration have been revised to follow a uniform framework that conforms to a cycle of continuous improvement (i.e. plan do, check and act).

Part II- shall require the institution to provide qualitative and quantitative description of the program's various educational processes. This component shall immediately follow part I. This component describes

the process that show how the institutional and program objectives are achieved and evaluated.

Part III-requires the accrediting team to assess the program using a rubrics-based performance measure. This shall be comparable to ABET's level of implementation.

## **ISSUES and CONCERNS**

Equivalency- process of program assessment and student learning outcomes assessment are substantially equivalent to those practiced by member economies of Washington Accord.

Transportability- Standardization of language and terminology so that meaning and intent are commonly understood by constituencies and stakeholders.

Reliability, validity and credibility of the assessment process: Acceptance of assessment strategies and practices across the accrediting community.

Evidence of student learning outcomes:A coherent way to explain the approach to the matter of evidence of student learning outcomes to outside constituencies or stakeholders.

Framework: A common conceptual framework that allows the various accrediting agencies to understand the key distinctions and similarities among approaches/practices.

## **FEED Accreditation of Engineering Programs**

**Prof. Edgardo G. Atanacio**

*College of Engineering*

*University of the Philippines Diliman*

### **FEED Accreditation**

- Outcomes-based: the focus is on what is learned rather on what is taught
- Intended to be consistent with the requirements of the Washington Accord
- Accreditation systems used as basis:
  - ABET (formerly known as the Accreditation Board for Engineering and Technology, USA)
  - Engineers Australia (EA)
  - Japan Accreditation Board for Engineering Education (JABEE)
- Self-assessment, evaluation
- Evaluator pool from industry and academe
- Evaluation based on five accreditation criteria

### **Criterion 1: Students**

- Admission and transfers
- Advising
- Performance evaluation and monitoring
- Student support

### **Criterion 2: Academic Program**

- Program educational objectives
- Program outcomes and assessment
- Curriculum
- Professional component

### **Criterion 3: Academic Environment**

- Faculty
- Support staff
- Facilities and physical resources
- Institutional support and financial resources
- Academic leadership and educational culture

### **Criterion 4: Systems and Processes**

- Feedback and inputs to continuous improvement processes
- Approach to educational design and review
- Approach to assessment and performance evaluation
- Dissemination of educational philosophy
- Approval processes for program development and amendment

### **Criterion 5: Specific Program Criteria (SPC)**

- Chemical Engineering
- Civil Engineering
- Electrical Engineering
- Electronics and Communications Engineering
- Industrial Engineering
- Mechanical Engineering
- Metallurgical Engineering

### **ISSUES and CONCERN**

Limited evaluator pool in the Philippines especially in Engineering



program. More engineers from the manufacturing industries must be trained to be an evaluator.

## **CONCLUSION AND GENERAL RECOMMENDATIONS**

The Philippines needs to develop an accreditation system that satisfies the requirements of the Washington accord. This system must be independent of the schools, industry-led and outcomes-based.

The present accreditation instruments presently used by the accreditation bodies need drastic change. Also there must be significant reorganization of the entire system.

The following immediate action is therefore recommended:

### **Creation of a Working Group consists of the following agencies/institutions**

- PTC
- PAASCU
- PACUCOA
- FEED
- AACUP
- + Gurus (Dr. Lazaro, Dr. Cruz and Dr. Follosco)

### **Expected Output of Working Group**

- Organize a unified body to accredit engineering programs in the Philippines consistent with the Washington Accord
- Thresh out differences in the accreditation concept, process and status
- Come up with a unified accreditation system consistent with Washington Accord
- Identify/tap sources of funding

**Convenor: Engineering Sciences and Technology Division, NAST**

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