

Introduction to ABET Accreditation

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1^{er} Workshop Internacional de Ingeniería Aplicada

Topics

- Who is ABET?
- Basics of ABET Accreditation
 - Process
 - Criteria
- ABET's Global Activities

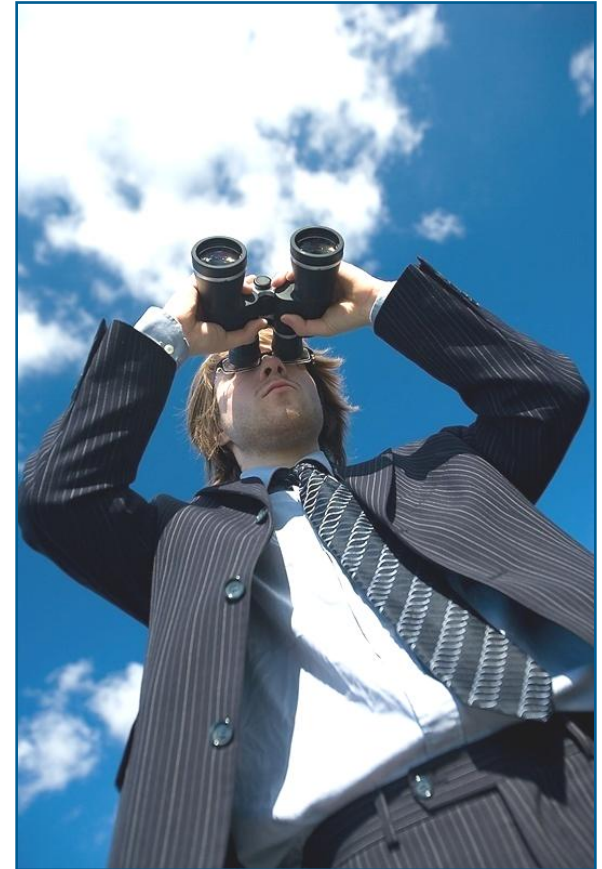


Who Is ABET?

ABET Vision

Provide **world leadership**
in **assuring quality** and in
stimulating innovation in

- Applied Science
- Computing
- Engineering, and
- Engineering Technology Education



ABET Mission

(slide 1)

ABET serves the public globally through the promotion and advancement of education in applied science, computing, engineering, and engineering technology.

ABET Mission

(slide 2)

- Accredits educational programs
- Promotes quality and innovation in education
 - Communicates and collaborates with its constituents and the public
- Assists in the development and advancement of education worldwide
- Anticipates and prepares for the changing educational environment and the future needs of its constituents
- Manages its operations and resources in an effective and fiscally responsible manner

What Does ABET Accredit?

- An academic program leading to a specific degree in a specific discipline
- Misconceptions clarified:
 - Not institutions
 - Not schools, colleges, or departments
 - Not facilities, courses, or faculty
 - Not graduates
 - Not degrees

Accreditation in the U.S.

- Non-governmental
- Voluntary
- Peer review

Who Recognizes ABET? In the U.S.

- 34 Member and Associate Member Societies of ABET
- Council for Higher Education Accreditation (CHEA)
- State Boards for Engineering & Surveying Licensure & Registration (over 55 jurisdictions)
- U.S. Patent Office
- U.S. Reserve Officers Training Corps
- Council of Engineering Specialty Boards (CESB)
- Board of Certified Safety Professionals (BCSP)
- Accreditors in other disciplines
- U.S. Trade Office
- U.S. State Department
- Employers (position announcements)

Brief ABET History

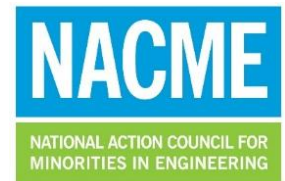
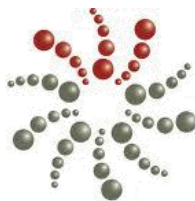
1932	Engineers' Council for Professional Development (ECPD) established
1936	ECPD first evaluated engineering degree programs
1980	Name changed to "Accreditation Board for Engineering and Technology" (ABET)
1980	Mutual Recognition Agreement (MRA) signed with Canada (1 st international agreement)
1989	Washington Accord Agreement signed with Canada, UK, Ireland, Australia, and New Zealand
1994	Policies and Procedures for Substantial Equivalency evaluations (evaluations outside the U.S.) approved
1995-2000	Major criteria reform (Engineering Criteria 2000)
2005	Name changed to "ABET" solely, no longer spelling out the former name
2006	Substantial Equivalency discontinued
2007	Accreditation of programs outside the U.S. began
2011	IFEES, GEDC Membership

ABET Organizational Design

- ABET is a federation of 34 professional and technical societies.
- Neither institutions nor individuals are members of ABET.
- ABET relies on the services of almost 2,200 volunteers supported by 33 full-time and seven part-time staff.



ABET's 34 Member Societies



Member Societies

- Represent “the profession”
 - Over 1.5 million individual members
- Develop program criteria
- Appoint Board representatives
- Nominate commissioners
- Recruit and assign program evaluators

Organizational Structure

Volunteer-Driven: 2,200+ Volunteers

Board of Directors

- Nominated by member societies
- Provide strategic direction and plans
- Decide policy and procedures
- Approve criteria

4 Commissions

- ASAC, CAC, EAC, ETAC
- Make decisions on accreditation status
- Implement accreditation policies
- Propose changes to criteria

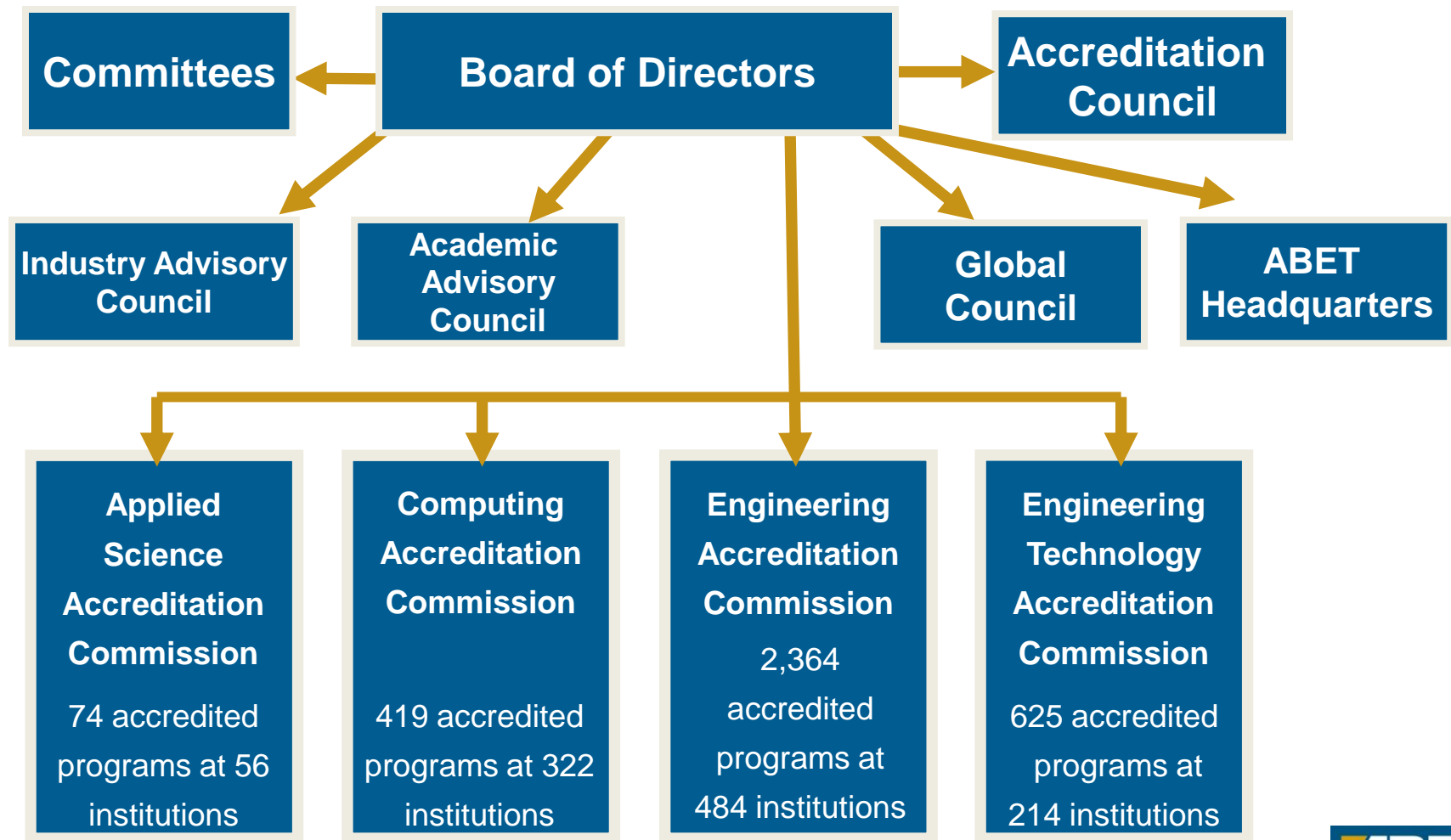
Program Evaluators

- Visit campuses
- Evaluate individual programs
- Make initial accreditation recommendations
- “Face of ABET”

100% of accreditation decisions are made by volunteers

ABET Headquarters (Baltimore): ~40 full-, part-time staff

ABET Organizational Structure



ABET Board of Directors

- 5 Officers
 - President, President-Elect, Past President, Secretary, Treasurer
 - 1-year terms, except for Treasurer who serves for 2 years
- 39 Directors
 - 1-3 Directors from each member society
 - 3-year term, renewable for additional term
- 5 Public Directors
 - Right to vote; no affiliation with member societies
 - 3-year term, renewable for additional term
- 4 Associate Member Representatives
 - Privilege of the floor, but no vote

Sources of ABET Funding

- ABET Member Societies
 - Costs associated with governance
- Institutions
 - Costs associated with accreditation
- Users (individuals, institutions, and societies) of professional services
 - Costs associated with workshops, symposia

85,000 students graduate from
ABET-accredited programs each year!



ABET Accreditation Process

Objectives

- Assure that graduates of an accredited program are adequately prepared to enter and continue the practice of applied science, computing, engineering, and engineering technology
- Stimulate the improvement of technical education
- Encourage new and innovative approaches to technical education and its assessment

Basic Requirements

- Programs must have graduates
 - Institution must assess entire program
- Appropriate institutional accreditation or governmental approval
 - U.S. Department of Education, or
 - Regional accreditation agency, or
 - National accreditation agency, or
 - State authority
 - Outside the U.S.
 - Appropriate entity that authorizes/approves the offering of educational programs

ABET Accreditation Process

- Programs prepare Self-Study Report for evaluation team
 - Documents how the program meets criteria
- Program review conducted by team of peer colleagues
 - Faculty, industry and government professionals, and administrators in the profession
 - Review the Self-Study Report, conduct the review visit
- ABET Program Evaluators (PEVs)
 - 2,200+ volunteers from academe, industry, and government (individual members of ABET Member Societies)

Peer Review

- Evaluation conducted by team of peer colleagues:
 - Faculty, industry and government professionals, and administrators in the profession
 - Review the Self-Study Report and conduct review visits
- ABET resource pool of visitors consists of approximately 2,200 faculty, industry, and government representatives

Review Team

Membership

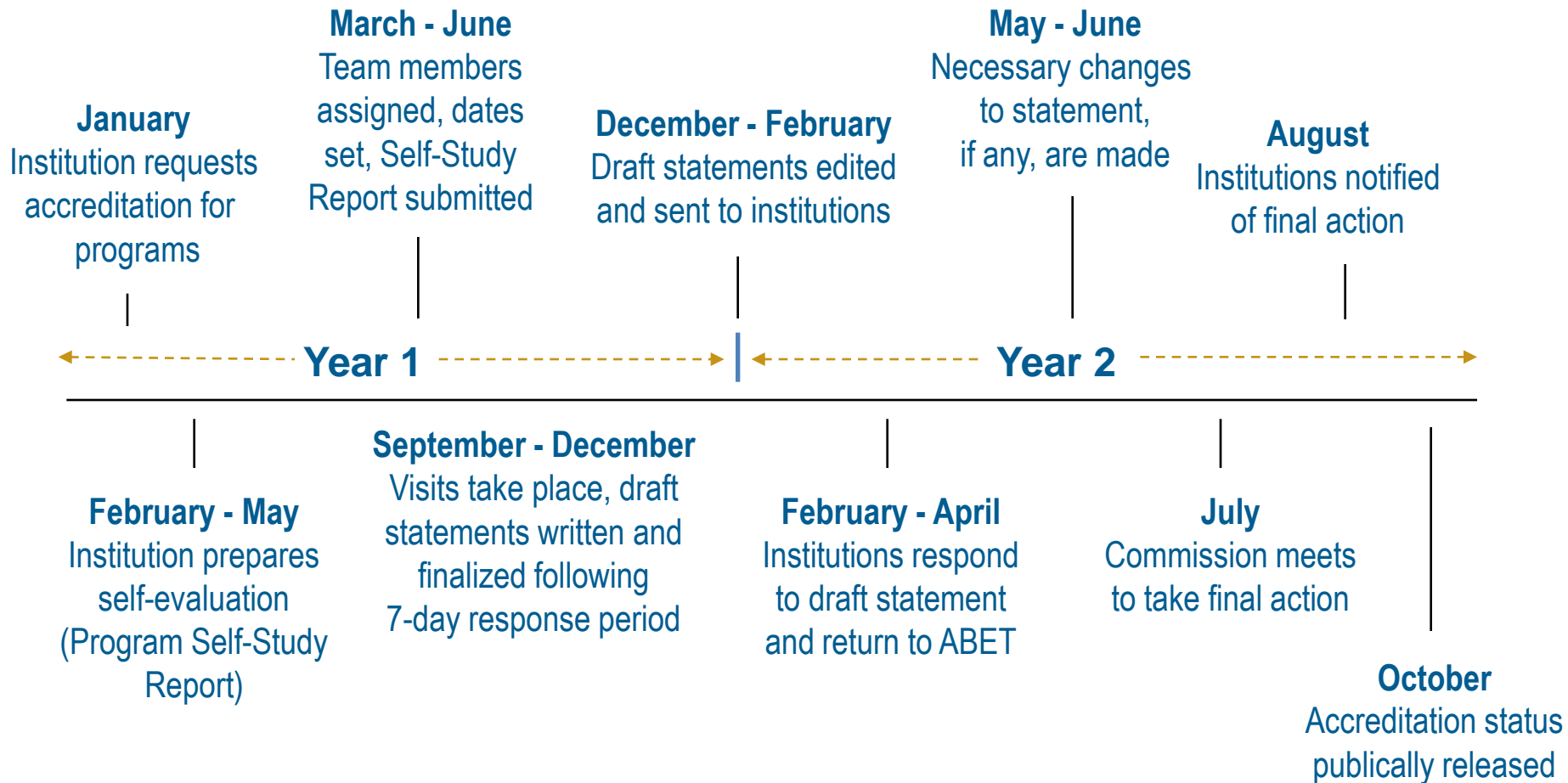
- One Team Chair
 - For large teams: Team Chair and Co-Chair
- Typically one program evaluator for each program being evaluated
 - Minimum of 2 for a single program
- Possibly one or more observers
 - International partners, U.S. state licensing boards, new program evaluators, ABET staff
- Team members are volunteers and not compensated for their work

On-Site Visit

- Direct observations
 - Program facilities
 - Student work, materials
 - Interview faculty, students, administrators, and other professional supporting personnel
- Complements the Self-Study Report
 - Provides direct, observable evidence that cannot be obtained from the Self-Study Report

Accreditation Timeline

18-Month Process



Government Documents

Accreditation Process

- *ABET Criteria for Accrediting Programs in [ASAC, CAC, EAC, ETAC]*
 - Program Management
 - Assessment
 - Curriculum
 - Resources and Support
- *ABET Accreditation Policy and Procedure Manual [APPM]*
 - Eligibility for Accreditation
 - Conduct of Evaluations
 - Public Release of Information
 - Appeals

Self-Study Basics and Context

- Institutions and programs prepare the Self-Study Report documenting how they comply with ABET policy and criteria
- Presents the program to the evaluation team
- Affords team its first impression of the extent to which the program meets the criteria
- Gives an impression of the institution's preparation for the upcoming visit

Criteria

The Guiding Principles of Accreditation Decisions

Overview of Criteria

Goals

- Ensure the quality of educational programs
- Foster the systematic pursuit of quality improvement in educational programs
- Develop educational programs that satisfy the needs of constituents in a dynamic and competitive environment

ENGINEERING CRITERIA 2000

For

ENGINEERING CRITERIA 2000

THE VISION FOR CHANGE

A Summary Report
of the
ABET/NSF/Industry Workshops



Engineering Criteria 2000

“EC 2000”



- Philosophy: “Outcomes-Based”
 - Institutions and programs define mission and objectives to meet their constituents’ needs
 - Outcomes: preparation for professional practice
 - Demonstrate how criteria are being met
 - Wide national and international acceptance
- Commitment to Continuous Improvement
 - Process focus: outcomes and assessment linked to objectives; input from constituencies
- Student, faculty, facilities, institutional support, and financial resources linked to program objectives

Program Names

- Determines:
 - Which ABET Accreditation Commission is responsible
 - ASAC, CAC, EAC, ETAC
 - Which professional society is responsible
 - Appropriate program evaluators
 - Which criteria are applicable
 - “General Criteria” for all programs
 - “Program Criteria” for certain disciplines

Criteria

- 1) Students
- 2) Program Educational Objectives
- 3) Student Outcomes
- 4) Continuous Improvement
- 5) Curriculum
- 6) Faculty
- 7) Facilities
- 8) Institutional Support

Criterion 1

Students

- The quality and performance of students and graduates is an important success factor.
- To determine success, the institution must **evaluate**, **advise**, and **monitor** students.
- Policies/procedures must be in place and enforced for acceptance of transfer students and validation of courses taken elsewhere.
- Assure that all students meet all program graduation requirements

Criterion 2

Program Educational Objectives

- The program must have published program educational objectives.
 - Consistent with the mission of the institution, the needs of the program's various constituents, and the criteria
 - There must be a documented and effective process, involving program constituents, for the periodic review and revision of these program educational objectives.

Criterion 3

Student Outcomes (slide 1)

- The program must have documented student outcomes that prepare graduates to attain the program educational objectives.
 - Narrow statements that describe what students are expected to know and be able to do by the time of graduation
 - These relate to the skills, knowledge, and behaviors that students acquire in their matriculation through the program.

Criterion 3

Student Outcomes (slide 2)

- The program **must demonstrate** that their students attain the following outcomes:
 - a) An ability to apply knowledge of mathematics, science, and engineering
 - b) An ability to design and conduct experiments, as well as to analyze and interpret data
 - c) An ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability

Criterion 3

Student Outcomes (slide 3)

- d) An ability to function on multidisciplinary teams
- e) An ability to identify, formulate, and solve engineering problems
- f) An understanding of professional and ethical responsibility
- g) An ability to communicate effectively
- h) The broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context

Criterion 3

Student Outcomes (slide 4)

- i) A recognition of the need for, and an ability to engage in, lifelong learning
- j) A knowledge of contemporary issues
- k) An ability to use the techniques, skills, and modern engineering tools necessary for engineering practice
- Plus any outcomes specific to field of study

Criterion 4

Continuous Improvement

- The program must regularly use a appropriate, documented processes for assessing and evaluating the extent to which the student outcomes are being attained.
- The results of these evaluations must be systematically utilized as input for the continuous improvement of the program through a documented plan. Other available information may also be used to assist in the continuous improvement of the program.

Criterion 5

Curriculum (slide 1)

- Faculty must assure that the curriculum devotes adequate attention and time to each component, consistent with objectives of the program and institution.
 - One year of a combination of college-level mathematics and basic sciences appropriate to the discipline
 - One and one-half years of engineering topics, consisting of engineering sciences and engineering design appropriate to the student's field of study

Criterion 5

Curriculum (slide 2)

- General education component that complements technical content and is consistent with program and institutional objectives
- Students prepared for engineering practice through curriculum culminating in a major design experience
 - Based on knowledge and skills acquired in earlier course work
 - Incorporates appropriate engineering standards and multiple realistic constraints

Criterion 6

Faculty

- Sufficient number to achieve program objectives
- Competent to cover all curricular areas of program
- Authority for creation, delivery, evaluation, modification, and continuous improvement of the program

Criterion 7

Facilities

- Adequate to (safely) accomplish educational objectives and outcomes of the program
- CAC: Computing resources are available, accessible, systematically maintained and upgraded, and supported.
- EAC: Foster faculty-student interaction; encourages professional development and professional activities; and provide opportunities to use modern engineering tools.

Criterion 8

Institutional Support

- Sufficient to attract, retain, and provide for continued professional development of faculty
- Sufficient to acquire, maintain, and operate facilities and equipment appropriate for the program



Global Engagement

ABET's Global Activities

Consistent with ABET's Constituents

- **Students/Young Professionals:** Increasingly multicultural and mobile
- **ABET Member Societies:** Nearly all have international membership/chapters
- **Higher Education:** Trend toward establishing international campuses, distance learning
- **Employers:** U.S. industry increasing its global presence

ABET IS Engaged Globally

Consistent with ABET's Mission and Vision

- Accredits programs outside the U.S.
- Assistance: MOUs with 17 agencies
- Mutual Recognition Agreements
 - Engineers Canada
 - International Engineering Alliance (IEA)
 - Seoul Accord
- Membership in Global Organizations
 - Global Engineering Deans Council (GEDC)
 - Intl Federation of Engineering Education Societies (IFEES)



Global Accreditation Activities

As of 1 October 2014

- Accredited **3,466** programs at **698** colleges and universities in **28** countries
- Non-U.S. Programs
 - Accredited **420** programs at **87** institutions in **27** countries
 - Uniform accreditation criteria, policies and procedures used for all visits, regardless of location

Mutual Recognition Agreements

- International agreement
 - Among bodies responsible for accrediting technical degree programs
- Recognizes “substantial equivalency”
 - Of accrediting systems
- Graduates of accredited programs are prepared to practice engineering at the entry level of the profession.

International Engineering Alliance

- Washington Accord*
 - Engineering
- Sydney Accord*
 - Engineering Technology
- Dublin Accord*
 - Engineering Technician
- APEC Engineer Agreement
 - Asia Pacific Economic Cooperation
- Engineers Mobility Forum
 - Professional Engineers Register
- Engineering Technologist Forum

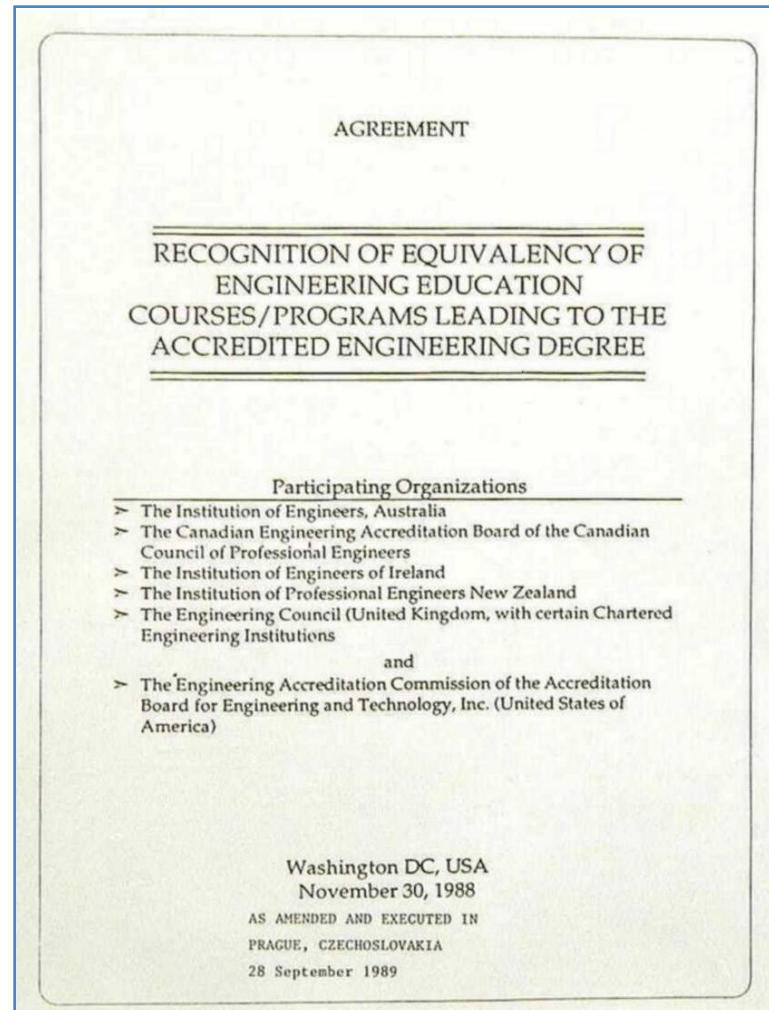


*** ABET is a signatory.**

Washington Accord

Engineering

- **U.S.** – *ABET* (1989)
- **Australia** – *IEAust* (1989)
- **Canada** – *CEAB* (1989)
- **Ireland** – *IEI* (1989)
- **New Zealand** – *IPENZ* (1989)
- **UK** – *EngC* (1989)
- **Hong Kong China** – *HKIE* (1995)
- **South Africa** – *ECSA* (1999)
- **Japan** – *JABEE* (2005)
- **Singapore** – *IES* (2006)
- **Chinese Taipei** – *IEET* (2007)
- **South Korea** – *ABEEK* (2007)
- **Malaysia** – *BEM* (2009)
- **Turkey** – *MUDEK* (2011)
- **Russia** – *AEER* (2012)
- **India** – *NBA* (2014)
- **Sri Lanka** – *IESL* (2014)



Mutual Recognition Agreements

- Periodic review of assessment processes
 - For every member organization
 - Every 6th year
 - Self-Study Report + observer teams
 - Campus evaluations, decision meetings
- Signatories' website lists recognized programs
- Graduate attributes
 - Exemplars for graduates of accredited programs (next slide)

Washington Accord

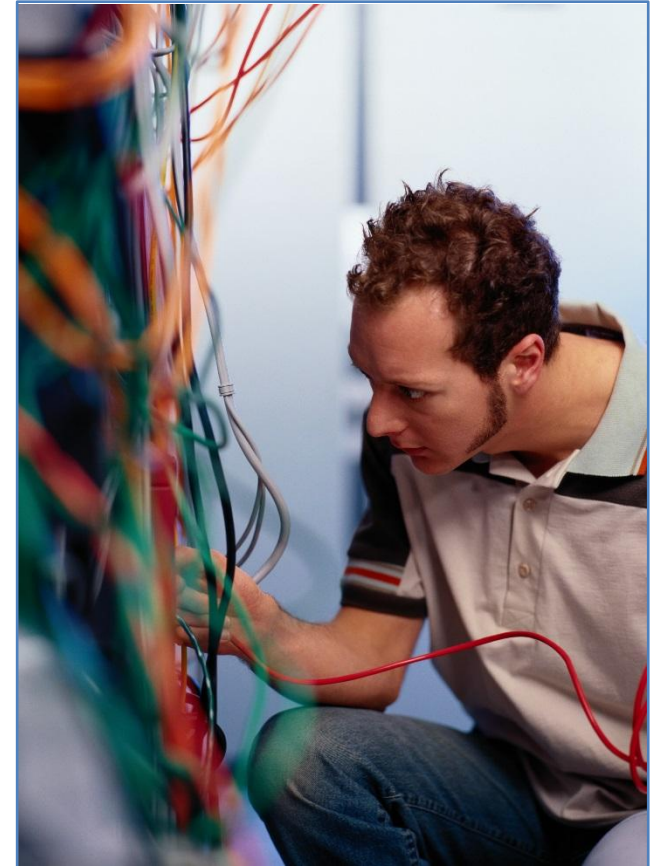
Global Graduate Attributes

- Engineering Knowledge
- Problem Analysis
- Design/Development of Solutions
- Investigation & Experimentation
- Modern Tool Usage
- The Engineer and Society
- Environment and Sustainability
- Ethics
- Individual and Teamwork
- Communication
- Project Management and Finance
- Lifelong Learning

Mutual Recognition Agreements

Sydney Accord (Engineering Technologist)

- Sydney Accord
 - Australia – *IEAust*
 - Canada – *CEAB*
 - Chinese Taipei – *IEET*
 - Hong Kong China – *HKIE*
 - Ireland – *IEI*
 - New Zealand – *IPENZ*
 - South Africa – *ECOSA*
 - South Korea – *ABEEK*
 - United Kingdom – *EngC*
 - United States – *ABET*



Mutual Recognition Agreements

Seoul Accord (Computing and IT)

- Seoul Accord
 - Australia – *IEAust*
 - Canada – *CEAB*
 - Chinese Taipei – *IEET*
 - Hong Kong China – *HKIE*
 - Japan – *JABEE*
 - South Korea – *ABEEK*
 - United Kingdom – *EngC*
 - United States – *ABET*



Website for ABET

www.abet.org

- Costs: Accreditation – Cost of Accreditation
- Process: Accreditation – Accreditation Criteria & Supporting Documents – Accreditation Policy and Procedure Manual and EAC
- Chile: International – Memoranda of Understanding – Chile – Acredita CL
- Accredited Programs: Accreditation – Accredited Program Search