



## **Introduction to ABET Accreditation**

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# Topics

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



**Who Is ABET?**



# About ABET

- ABET is a forward-thinking purpose-driven organization that accredits college and university *programs*\* in the disciplines of applied science, computing, engineering and engineering technology.

\* *Not institutions or graduates*

# ABET's Core Purpose

With ABET accreditation, students, employers, and the society we serve can be ***confident*** that a program meets the quality standards that produce graduates prepared to enter a global workforce

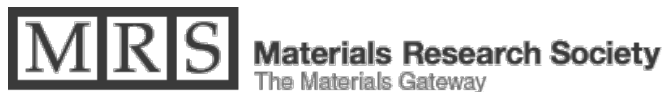
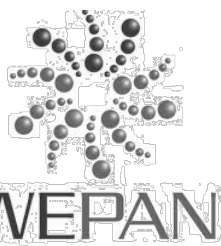


# ABET Organizational Design

- ABET is a federation of 35 professional and technical societies representing the professions.
  - Over 1.5 million individual members
- Neither institutions nor individuals are members of ABET.
- ABET relies on the services of almost 2,200 volunteers supported by 33 full-time and 10 part-time staff.



# ABET's 35 Member Societies



# BOARD OF DIRECTORS

Serves As Strategic Planning Committee  
Elected by the Board of Delegates

# BOARD OF DELEGATES

Societies appoint in proportion to # of programs with limits, and all member societies and associate member societies have at least 1 delegate.

## Area Delegations

Engineering  
Technology

Engineering

Computing

Applied  
Sciences

ETAC

EAC

CAC

ASAC

Finance  
Committee

Audit  
Committee

Governance  
Committee

Academic  
Advisory  
Council

Industry  
Advisory  
Council

Global  
Advisory  
Council

**Committees and Advisory Councils Also Serve  
As Resources To The Board of Directors**

Accreditation  
Council

Nominating  
Committee

Awards  
Committee

# Organizational Structure

## Volunteer-Driven: 2,200+ Volunteers

### Board of Directors

- Elected by Board of Delegates
- Provides strategic direction and plans
- Appeals process

### Board of Delegates

- Nominated by & represent the member societies
- Decides policy and procedures
- Approves 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 Accreditation Statistics

As of 1 October 2016 ... 3,709 Programs

(Preliminary Data)

- Accredited programs by commission:

ASAC: 87

CAC: 461

EAC: 2550

ETAC: 629

| Commission | Domestic |              | Non-Domestic |              |
|------------|----------|--------------|--------------|--------------|
|            | Programs | Institutions | Programs     | Institutions |
| ASAC       | 82       | 64           | 5            | 3            |
| CAC        | 391      | 307          | 70           | 47           |
| EAC        | 2106     | 429          | 444          | 99           |
| ETAC       | 571      | 206          | 58           | 19           |



## Value of ABET Accreditation



# Accreditation Value Students and Parents

- Helps students select quality programs
- Shows institution is committed to improving the educational experience
- Helps students prepare to enter “the profession”
- Enhances employment opportunities
- Establishes eligibility for financial aid and scholarships

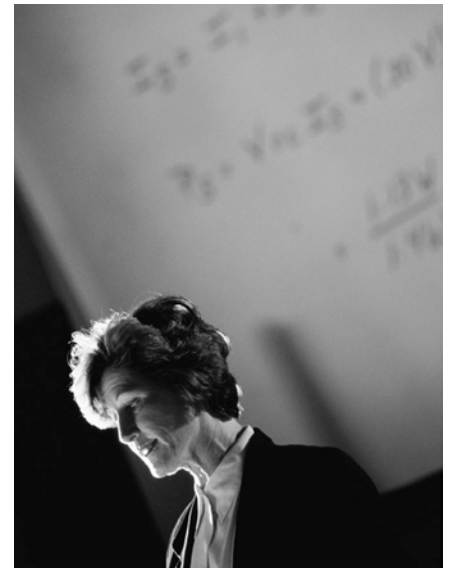


# Accreditation Value Institutions

- “Third-party” confirmation of quality of programs
- Prestige, recognition by “the profession”
- Attract the strongest students

## Faculty

- Institution is serious and committed to improving quality
  - Facilities, financial resources, training, etc.
- Encourages “best practices” in education



# Accreditation Value Industry

- Ensures educational requirements to enter “the profession” are met
- Aids industry in recruiting
- Enhances mobility
- Opportunity to help guide the educational process
  - Program’s industrial advisory groups
  - Professional, technical societies

## Society

- Helps ensure public safety
  - Supports professional licensure, certification
- Provides a high-leverage means for development of a country’s economy.





## Basics of ABET Accreditation



# Generally Accepted Accreditation Principles

- Accreditation is **voluntary**
- Non-governmental organization
- Fair and impartial peer review process
- Requires self-assessment by the program/school
- Continuous process (reviewed every *n* years)
- Failure of single criterion results in loss of accreditation
  - Deficiencies in one area CANNOT be compensated by strengths in other areas.

# What Programs Does ABET Accredite?

- Academic program leading to a specific degree in a specific discipline
  - Assigned commission depends on program name
- Applied Science (ASAC): associate's, bachelor's, master's
  - Examples: Health Physics, Industrial Hygiene, Industrial & Quality Management, Safety Sciences, Surveying & Mapping
- Computing (CAC): bachelor's
  - Computer Science, Info Systems, Info Technology
- Engineering (EAC): bachelor's, master's
- Engineering Technology (ETAC): associate's, bachelor's

# 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

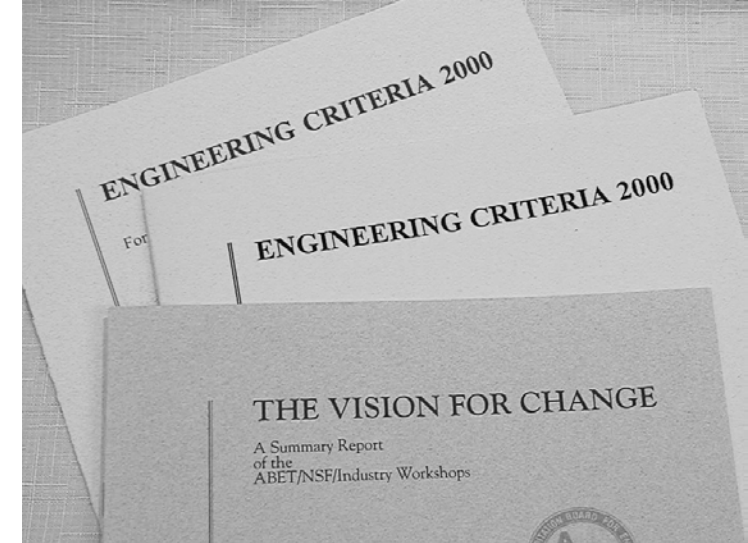
# Program Names

- 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

# Evaluative Criteria: A Critical Component

## ABET Criteria

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



Plus, program-specific  
**Program Criteria**  
amplifications to  
criteria noted by “\*”

# 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

# Conducting the 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
  - Review the Self-Study Report, conduct the review visit
- All team findings are reviewed, normalized and finalized by the full commission of team chairs.
- Periodic re-evaluation (maximum 6 years)



# 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

# The PEV Worksheet – an Excerpt

|   | Last Visit | Pre-Visit | Day 0 | Day 1 | Exit Stmt |
|---|------------|-----------|-------|-------|-----------|
| <b>Criterion 1. STUDENTS</b>  |            |           |       |       |           |
| <b>Student performance</b> must be evaluated.   |            |           |       |       |           |
| <b>Student progress</b> must be monitored to foster success in attaining student outcomes, thereby enabling graduates to obtain program objectives.   |            |           |       |       |           |
| Students must be advised regarding curriculum and career matters.   |            |           |       |       |           |
| The program must have and enforce policies for accepting both new and <b>transfer</b> students, awarding appropriate academic <b>credit</b> for courses taken at other institutions, and awarding appropriate academic credit for work in lieu of courses taken at the institution.                             |            |           |       |       |           |
| The program must have and enforce procedures to ensure and document that students who graduate meet all <b>graduation requirements</b> .  |            |           |       |       |           |
|   |            |           |       |       |           |
| <b>Criterion 2. PROGRAM EDUCATIONAL OBJECTIVES</b>  |            |           |       |       |           |
| The program must have <b>published program educational objectives</b> that are consistent with the mission of the institution, the needs of the program's various constituencies, and these criteria.   |            |           |       |       |           |
| There must be a documented, systematically utilized, and effective process, involving program constituencies, for the <b>periodic review of these program educational objectives</b> that ensures they remain consistent with the institutional mission, the program's constituents' needs, and these criteria. |            |           |       |       |           |

# Continuous Quality Improvement (CQI)

- ABET criteria have been developed on the principles of continuous quality improvement.
- On-going process at institution to improve quality of student's educational experience
  - Systematic process: documented, repeatable
  - Assess performance against criteria
  - Take actions to improve program
- Accreditation is a **part** of CQI.
  - Verification that program meets certain level of quality, and CQI is part of the quality process.

# Accreditation Timeline

## 18-21\* Month Process





# ABET's Global Engagement



# ABET's Global Activities

## Consistent with ABET's Constituents

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

# ABET Is Engaged Globally

## Consistent with ABET's Mission and Vision

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

# Global Accreditation Activities

As of 1 October 2016 (preliminary data)

- 1) Accredited **3,709** programs at **752** colleges and universities in **29** countries
- 2) Non-U.S. Programs
  - Accredited **574** programs at **121** institutions in **28** countries
  - Uniform accreditation criteria, policies, and procedures used for all visits, regardless of location

# ABET Accredited Programs

- Bahrain
- Chile
- China
- Colombia
- Ecuador
- Egypt
- India
- Indonesia
- Jordan
- Kazakhstan
- Kuwait
- Lebanon
- Mexico
- Morocco
- Oman
- Palestine
- Peru
- Philippines
- Portugal
- Qatar
- Russian Federation
- Saudi Arabia
- Singapore
- South Africa
- Spain
- Turkey
- United Arab Emirates
- Vietnam
- USA

# 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 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.

# Resources

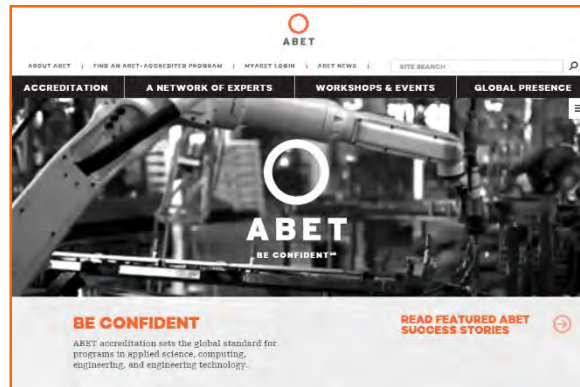


Institute for the Development of Excellence  
in Assessment Leadership (IDEAL)

## Program Assessment Workshops

Intensive, Interactive Daylong Workshops

Website: [www.abet.org](http://www.abet.org)



## ABET Symposium

- April of each year
- Over 70 sessions
- Four educational tracks
  - Accreditation track
- Self-Study Reports



# Questions?

**[accreditation@abet.org](mailto:accreditation@abet.org)**

**or**

**[jsussman@abet.org](mailto:jsussman@abet.org)**



# Backup Slides

# Criterion 1

## Students

- Student performance must be evaluated.
- Student progress must be monitored to foster success in attaining student outcomes.
- Program must have and enforce policies for accepting both new and transfer students, awarding appropriate academic credit for courses taken at the institution and other institutions.
- Program must have and enforce procedures to ensure and document that students who graduate meet all 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, systematically utilized, and effective process, involving program constituencies, for the periodic review of these program educational objectives that ensures they remain consistent with the institutional mission, the program's constituents' needs, and these criteria.

# Criterion 3

## Student Outcomes (slide 2)

- For associate degree programs, student outcomes must include, but are not limited to:
  - a) an ability to apply the knowledge, techniques, skills, and modern tools of the discipline to narrowly defined engineering technology activities
  - b) an ability to apply a knowledge of mathematics, science, engineering, and technology to engineering technology problems that require limited application of principles but extensive practical knowledge
  - c) an ability to conduct standard tests and measurements, and to conduct, analyze, and interpret experiments

# Criterion 3

## Student Outcomes (slide 3)

- d) an ability to function effectively as a member of a technical team
- e) an ability to identify, analyze, and solve narrowly defined engineering technology problems
- f) an ability to apply written, oral, and graphical communication in both technical and non-technical environments; and an ability to identify and use appropriate technical literature
- g) an understanding of the need for and an ability to engage in self-directed continuing professional development

# Criterion 3

## Student Outcomes (slide 4)

- h) an understanding of and a commitment to address professional and ethical responsibilities, including a respect for diversity
- i) a commitment to quality, timeliness, and continuous improvement

# Criterion 3

## Student Outcomes (slide 5)

- For baccalaureate degree programs, student outcomes must include, but are not limited to:
  - a) an ability to select and apply the knowledge, techniques, skills, and modern tools of the discipline to broadly-defined engineering technology activities
  - b) an ability to select and apply a knowledge of mathematics, science, engineering, and technology to engineering technology problems that require the application of principles and applied procedures or methodologies
  - c) an ability to conduct standard tests and measurements; to conduct, analyze, and interpret experiments; and to apply experimental results to improve processes

# Criterion 3

## Student Outcomes (slide 6)

- d) an ability to design systems, components, or processes for broadly-defined engineering technology problems appropriate to program educational objectives
- e) an ability to function effectively as a member or leader on a technical team
- f) an ability to identify, analyze, and solve broadly-defined engineering technology problems
- g) an ability to apply written, oral, and graphical communication in both technical and non-technical environments; and an ability to identify and use appropriate technical literature

# Criterion 3

## Student Outcomes (slide 7)

- h) an understanding of the need for and an ability to engage in self-directed continuing professional development
- i) an understanding of and a commitment to address professional and ethical responsibilities including a respect for diversity
- j) a knowledge of the impact of engineering technology solutions in a societal and global context
- k) a commitment to quality, timeliness, and continuous improvement

# Criterion 4

## Continuous Improvement

- The program must regularly use 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. Other available information may also be used to assist in the continuous improvement of the program.

# Criterion 5

## Curriculum (slide 1)

- The curriculum must effectively develop the following subject areas in support of student outcomes and program educational objectives.
- Program must develop ability of students to apply mathematics to solutions of technical problems.
  - Associate degree programs will, at a minimum, include algebra and trigonometry at a level appropriate to the student outcomes and program educational objectives.
  - Baccalaureate degree programs will include the application of integral and differential calculus or other mathematics above the level of algebra and trigonometry appropriate to the student outcomes and program educational objectives.

# Criterion 5

## Curriculum (slide 2)

- Technical content of program must focus on the applied aspects of science and engineering.
  - Represent at least  $1/3$  of the total credit hours for the program but no more than  $2/3$  of the total credit hours for the program.
  - Include a technical core that prepares students for the increasingly complex technical specialties they will experience later in the curriculum.
  - Develop student competency in the use of equipment and tools common to the discipline.

# Criterion 5

## Curriculum (slide 3)

- The basic science content of the program must include physical or natural science with laboratory experiences as appropriate to the discipline.
- Baccalaureate degree programs must provide a capstone or integrating experience that develops student competencies in applying both technical and non-technical skills in solving problems.

# Criterion 5

## Curriculum (slide 4)

- When used to satisfy prescribed elements of these criteria, credits based upon cooperative/internships or similar experiences must include an appropriate academic component evaluated by the program faculty.
- An advisory committee with representation from organizations being served by the program graduates must be utilized to periodically review the program's curriculum and advise the program on the establishment, review, and revision of its program educational objectives. The advisory committee must provide advisement on current and future aspects of the technical fields for which the graduates are being prepared.

# Criterion 6

## Faculty

- Each faculty member teaching in the program must have expertise and educational background consistent with the contributions to the program expected from the faculty member.
- The competence of faculty members must be demonstrated by such factors as education, professional credentials and certifications, professional experience, ongoing professional development, contributions to the discipline, teaching effectiveness, and communication skills.
- Collectively, the faculty must have the breadth and depth to cover all curricular areas of the program.

# Criterion 6

## Faculty

- The faculty serving in the program must be of sufficient number to maintain continuity, stability, oversight, student interaction, and advising.
- The faculty must have sufficient responsibility and authority to improve the program through definition and revision of program educational objectives and student outcomes as well as through the implementation of a program of study that fosters the attainment of student outcomes.

# Criterion 7

## Facilities

- Classrooms, offices, laboratories, and equipment must be adequate to support attainment of student outcomes and to provide an atmosphere conducive to learning.
- Modern tools, equipment, computing resources, and labs must be available, accessible, and systematically maintained and upgraded to enable the student outcomes and to support program needs.
- Students must be provided appropriate guidance regarding use of the tools, equipment, computing resources, and laboratories available to the program.
- Library services and the computing and information infrastructure must be adequate to support the scholarly and professional activities of the students and faculty.

# Criterion 8

## Institutional Support

- Institutional support and leadership must be adequate to ensure the quality and continuity of the program.
- Institutional services, financial support, and staff (both administrative and technical) provided to the program must be adequate to meet program needs.
- Resources available to the program must be sufficient to attract, retain, and provide for the continued professional development of a qualified faculty.
- Resources must be sufficient to acquire, maintain, and operate infrastructures, facilities and equipment appropriate for the program, so that student outcomes can be attained.

# Program Criteria

- Each program seeking accreditation from the Engineering Technology Accreditation Commission of ABET must demonstrate that it satisfies all Program Criteria implied by the program title.

# 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)
- **China** – *CAST* (2016)

# 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

# Sydney Accord

## Engineering Technologist

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



# Dublin Accord Engineering Technician

- Australia – *IEAust*
- Canada – *CCTT*
- Ireland – *IEI*
- New Zealand – *IPENZ*
- South Africa – *ECSA*
- South Korea – *ABEEK*
- United Kingdom – *EngC*
- United States – *ABET*



# Seoul Accord

## Computing and IT

- Australia – *ACS*
- Canada – *CIPS*
- Chinese Taipei – *IEET*
- Hong Kong China – *HKIE*
- Japan – *JABEE*
- South Korea – *ABEEK*
- United Kingdom – *BCS*
- United States – *ABET*

