

INSTITUTE OF
INTERNATIONAL
EDUCATION



INTERNATIONAL EDUCATION in APPLIED SCIENCE, COMPUTING, ENGINEERING, and ENGINEERING TECHNOLOGY

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ABET Managing Director, Accreditation / CIO

April, 2013

Global E3 Annual Meeting

Topics

- Who is ABET?
- ABET's Global Engagement
- The Global Professional
- Future Challenges

Who is ABET?

5

ABET Essentials

1. ABET's Vision



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

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

2. Program Accreditor

Also called “Specialized” Accreditor

- Evaluate *programs*
 - Not degrees, courses, or institutions
 - Relevant, technically strong
 - Professional skills
 - Graduates ready to enter “the profession”
- Peer review process





National Institute of
Ceramic Engineers
(NICE)



Society for Mining, Metallurgy & Exploration



4. ABET is Volunteer-Driven

2,200+ Volunteers develop ABET Policy, Criteria, and make Accreditation Decisions

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

5. Components of ABET Accreditation

- “Outcomes-based” Criteria (“EC2000”)
 - “What is learned” vs. “what is taught”
 - Focus on constituent needs
 - Prepare graduates to enter “the profession” (AS, BS, MS)
 - Encourages program innovation, “uniqueness,” Examples:
 - **International engagement:** prepare students for globalization through international exchanges, study abroad, foreign work experience, etc.
 - Entrepreneur skills, enhanced liberal arts education
- Continuous Quality Improvement
 - Formal assessment processes
- 18-month Evaluation Process
 - Self-Study, Campus Visit, Decision Meeting





Global Engagement

ABET's International Activities

Globally Engaged and Committed

- 324 accredited programs in 23 countries outside U.S.
- MOUs with 15 national agencies
- Mutual Recognition Agreements
 - Engineers Canada
 - Washington Accord (Engineering), 15 nations
 - Sydney Accord(Engineering Tech, 4 year), 8 nations
 - Dublin Accord (Engineering Tech, 2 year), 4 nations
 - Seoul Accord (Computing), 8 nations
- Membership in Global Organizations
 - Global Engineering Deans Council (GEDC)
 - Int'l Federation of Engineering Education Societies (IFEES)



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*



The Global Professional

Why a Global Focus?

Business

- U.S. Corporations
 - ~ 50% profits outside U.S.
- Global technical professionals
 - Work anywhere, with anyone
 - Appreciation for, and ability to function in, a multicultural environment



Why A Global Focus?

Global Grand Challenges

Environment



World Population



Clean Water



Conflict



Aging Population



Energy



Why a Global Focus?

Education

- International Students in US
- US Students “Study Abroad”
- International Institutions
 - ABET-accreditation
(U.S. foreign campuses, non-US)
- Distance Learning
 - Explosive Growth
 - Transcends geographical borders





Future Challenges

Education is CHANGING

Students are
changing: Gen X,
Gen Y, Gen Z

Globalization of
the workforce

“Density” of
academic programs



Diversity of student
population

Non-traditional
students

Explosion of
distance learning:
online education

The Internet:
a tool for learning

Students are *Changing*

➤ Digital Natives (Gen Z)

- Born between mid-1990s and end of 2000s

➤ Lifelong users of

- Internet
- Instant messaging and text messaging
- MP3 players
- Cell phones
- *YouTube, Facebook, etc.*



➤ Educational experience: what is **their** expectation?

Students are Global and Mobile!



Studying and Working Abroad • Learning
Online • International Experiences



ENGINEERS WITHOUT BORDERS
USA



Other Challenges

➤ Curriculum

- “Inflexibility” of engineering curriculum
 - Perceived and real
- Density: enhanced liberal arts content
 - Languages, culture, history
 - Advance business skills, entrepreneurship

➤ Faculty “buy-in”

➤ Potential or perceived impact on:

- Accreditation status?
- Assessment?

Other Challenges

➤ ABET

- Evolution of criteria: include international experience?
- Commitment of ABET's professional societies

Other Organizations

➤ ABET Engagement

- *Global E3*
- *University of Rhode Island Colloquium*
- *IES Study Aboard*
- *ASEE Engineering Deans Council*
- *Engineers Without Borders*

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



Questions?



Thank You!

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Criterion 3: Student Outcomes (1/4)

- 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 (2/4)

- 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 (3/4)

- 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 (4/4)

- i) A recognition of the need for, and an ability to engage in life-long 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

Joseph L. Sussman, Ph.D.

Joseph L. Sussman is Managing Director for Accreditation and Chief Information Officer for ABET (formerly The Accreditation Board for Engineering and Technology,) the recognized accreditor for college and university technical education programs in applied science, computing, engineering, and engineering technology worldwide. Dr. Sussman leads ABET's global accreditation operation and engages the organization's volunteer leadership in tactical execution and strategic development of ABET's accreditation practice. Prior to joining ABET, Dr. Sussman spent 26 years as an engineer and business executive at Bayer AG,

leading many of the company's quality, manufacturing, and IT efforts. Most recently, Dr. Sussman was a Health Care Industry Specialist at Deloitte Consulting, where he worked with many prominent global clients.

In addition to his industry background, and prior to joining ABET staff, Dr. Sussman served ABET for 24 years in nearly every volunteer capacity, including Program Evaluator for mechanical engineering programs, Chair of the Engineering Accreditation Commission, Representative Director from ASME on the ABET Board of Directors, and as ABET President for 2008-2009.

Dr. Sussman was inducted as an ABET Fellow in 2002 after having played a pivotal role in implementing the ground-breaking Engineering Criteria 2000. In 2011 the ASME Board of Governors elected Dr. Sussman an ASME Fellow for his contributions to quality in engineering education. Dr. Sussman earned his baccalaureate, master's, and doctoral degrees in mechanical engineering from Columbia University.