

Overview of Standards Education Activities in North America

Presentation to ICES 2009

Erik Puskar

National Institute of Standards & Technology

Gaithersburg, MD USA

What is happening in North America?



Actors

- Academia
- American National Standards Institute (ANSI)
- Standards Council of Canada (SCC)
- Dirección General de Normas (DGN)
- Standard developing organizations (SDOs)
- Professional societies and trade associations
- National Institute of Standards & Technology
- Other government agencies

Canada



Educational Policy



Standards Council of Canada
Conseil canadien des normes

- The Canadian Standards Strategy 2009-2012
 - “Increase understanding of and participation in the NSS by academia”.
- SCC Corporate Plan 2008/2009-2012/2013
 - “Develop increased recognition of SCC’s role amongst key stakeholder groups within the academic community
 - Greater engagement of academic community in standardization activities
 - Standards integrated into course curricula
 - Partnerships to pursue standardization research

SCC's Educational Policy (cont.)

- Policy to provide ISO and IEC standards to universities and colleges
- Canada has 372 universities and colleges
- Some restrictions
- Digital Rights Management

Promotion of SCC Educational Policy

- National Council of Deans of Engineering and Applied Science
- Canadian Council of Professional Engineers
- Association of Universities and Colleges of Canada
- Association of Canadian Community Colleges
- Technical Committee members from academia

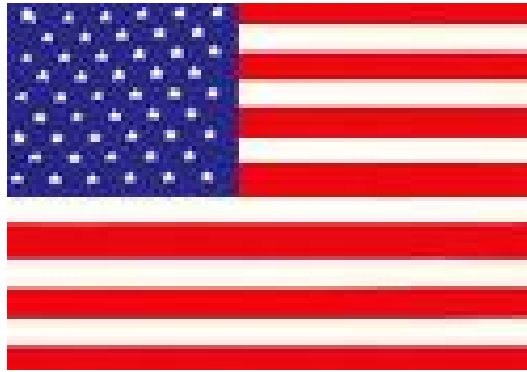
Current Program Status

- 46 license agreements with Canadian Universities and Colleges
 - 580 ISO & IEC Standards made available
 - 82 courses representing Information Technology, Engineering, Medical Devices, Environmental, etc.
 - 1,765 students with access to standards relevant to their area of study

Benefits from SCC's Educational Policy

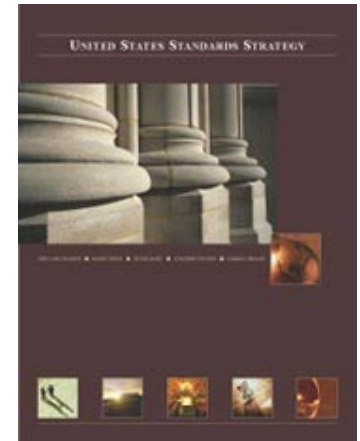
- Free access to published international standards from ISO and the IEC
- The application of practical industry knowledge in an educational setting;
- An understanding of the standardization process and its role in the student's field of study; and
- A smoother transition into the workplace for graduating students.

USA



U.S. Standards Strategy Initiative #10

- *Establish, standards education as a high priority within the United States, private, public and academic sectors*
 - Develop or enhance standards education programs
 - National database of standardization case studies
 - Encourage colleges and universities to create standardization programs
 - Facilitate the creation of a communications network for standardization education
 - Action items for all stakeholders





Committee on Education (COE)

- Goals: Develop long term strategies to .
 - educate the next generation of business leaders on the strategic impact of standards and conformity assessment
 - include standards in institutions of higher education
 - Case study initiative

- Leadership: A partnership of business and academia
 - Chairman: Dr. Richard Forselius
 - Vice Chairman: Bruce Harding, Purdue University

Committee on Education (cont.)

- University Outreach Pilot Project
 - Launched in 2005, program makes standards, specifications and guidelines available for use by faculty and students in university classrooms
 - To date:
 - 66 schools have been/are now participating
 - 1434 students in the classes have been/are now engaged
 - 391 standards have been provided

Academia

- U.S. has approximately 2,500 universities
- Five stand-alone semester courses on standards at university level plus one seminar
- Many engineering schools include some standards modules (ABET requirement) in their curricula
- ICT and business programs as well beginning to cover standards

ABET Engineering Standards Education Requirement

- ABET is the national accreditation body for engineering schools in the United States.
- In 2000, ABET established the following requirement for “engineering standards”:
 - The curriculum must prepare students for engineering practice culminating in a major design experience based on the knowledge and skills acquired in earlier coursework and incorporating engineering standards and realistic constraints that include most of the following considerations: economic, environmental, sustainability, manufacturability, ethical, health and safety, social, and political. (<http://www.ele.uri.edu/faculty/daly/criteria.2000.html> ; Criterion 4: Professional Requirements)

University Courses Offered in U.S.

- Catholic University
 - *Strategic Standardization*
 - Graduate level engineering
- University of Colorado
 - *Standardization and Standards Wars*
 - Graduate level engineering

University Courses in U.S.(cont.)

- University of Colorado
 - *Standards: Business, law and Policy*
 - Graduate Engineering in the Interdisciplinary Telecommunications Program
- University of Pittsburgh
 - *Web Technologies and Standards*
 - Undergraduate ICT

University Courses in U.S.(cont.)

- Purdue University
 - *Global Standardization*
 - Graduate engineering
- Yale University
 - *Technological Standards as Regulation*
 - Information society (law school) seminar

Standards Development Organizations

- Over 600 SDO's in North America
- Many offer extensive continuing education programs both classroom, on-line and certification programs
- Primarily focused on technical subjects and courses specific to standards which they produce
- <http://www.standardslearn.org/trainingcourse.aspx> contains 180 links

Role of SDO's and Professional Societies in Standards Education



Sample E-Learning Offerings

- Standards Aware (SES) – 8 courses
- IEEE – 2 courses + 7 under development
- ASTM – 5 tutorials
- ANSI – 4 courses
- ASME – 3 modules
- Others as well

NIST and Standards Education



- Education about standardization is important for:
 - NIST staff, so that they can be more informed participants in the standards process
 - NIST and other agency staff, so that they can be more informed users of standards
 - Programs for foreign officials (Standards-in-Trade)
 - Our partners to help educate their stakeholders and promote awareness (www.standards.gov)
 - All of the above by holding workshops and conferences

Post-Doctoral Opportunity

THE NATIONAL ACADEMIES
Advisers to the Nation on Science, Engineering, and Medicine



Research Associateship Programs

FELLOWSHIPS OFFICE

*Methods and Trends in Measurement and
Standards Education*

Host organization: NIST, Weights and Measures Division

Technology Services

NIST
National Institute of
Standards and Technology

Promoting Education About Standardization in North America

NIST

Gaithersburg, Maryland USA

May 8, 2009

Given the changing environment for standards this workshop looks to build on the foundation of the work being done by ICES, the ANSI Committee on Education and the 2008 NIST workshop on education about standardization. Participants will learn about existing course offerings and lessons learned from both academic and industry representatives and will discuss different pedagogical alternatives and future strategies for developing, delivering and promoting standards education curricula in North America.

Review of South America



Brazil (ABNT)

- Large variety of standards related courses
- ABNT is developing a 60 hour certification course
- Lots of effort to increase awareness

Uruguay (UNIT)

- UNIT offers certificate programs in:
 - Quality, environment, security, HR, marketing, forestry, information security, training, health services and food safety
- Embedded within these courses are modules in quality management and integrated systems, standardization and conformity assessment
- Since 1971 have provided over 2,000 courses and trained more than 46,000 students

Argentina (IRAM)

- Focuses on the university level having agreements with 65 universities.
- IRAM also offers several diploma programs in a variety of fields
- IRAM uses a 5 level evaluation program
- In 2007 held more than 800 courses with close to 14,000 participants

Conclusions

- SDO's, associations and other private sector organizations are providing much of the standards education in North America
- Both ANSI and SCC have important roles in the education process including making standards available to universities
- Currently five university level courses on standards are offered in USA and but many with some modules on standards. Looking to expand further
- Many South American countries are promoting greater awareness of standards with national standards bodies providing or organizing much of the training

ありがとうございました

Thank you