IEEE Standards Education

Including a sneak peek at the new IEEE Standards University

18 May 2015

SES WEBINAR with Jennifer McClain and Susan K. Tatiner
Standards Education is a joint activity of IEEE Standards Association and IEEE Educational Activities.
SEC Mission

1. **Promote the importance of standards** in meeting technical, economic, environmental, and societal challenges

2. **Secure and disseminate learning materials** on the application of standards in the design and development aspects of educational programs

3. **Secure and provide short courses** about standards needed in the design and development phases of professional practice

4. **Actively promote the integration of standards into academic programs**

5. **Lead other education initiatives** planned jointly by EAB and the SA as needed
What Is IEEE Standards Education?

- Educating students about standards and standardization
  - their critical role in the workforce and society
- Continuing efforts to more widely influence the inclusion of technical standards into university curricula
- Providing resources for university professors
  - to facilitate the incorporation of standards topics into their courses
- Providing resources for students
  - to help with the inclusion of technical standards into their coursework
- Teaching the open standards development process
  - to provide understanding of the intersection of economics, technology, and politics that are integral to standardization
  - The ‘who’, ‘what’, ‘where’, ‘why’ and ‘how’ of standards
- Delivering technical content about specific areas of standardization
Why Standards Education Is Important

- Recognizes key role standards play in engineering, technology and computing fields
- Knowledge of standards can help facilitate the transition from classroom to professional practice by aligning educational concepts with real-world applications
- Incorporating standards into the curriculum...benefits students and faculty mentors as they face challenging design processes
- Provides tools for use in learning about standards and their impact on design and development
Standards & the Engineering Student

- Will the working engineer use standards in his or her everyday professional life?

- **Yes! Almost every day**, according to industry experts. Most aspects of business are impacted by standards.

- And yet, most engineering students have little to no exposure to standards in their undergraduate or even graduate careers.

- An engineer who understands something about standards before entering the workforce is more valuable to his or her company.

- All companies will provide on the job training, but basic knowledge will go a long way.
Standards & Students in Other Disciplines

Would Business, Law, Economics, Political Science, and Public Policy students benefit from an understanding of standards and standardization?

Yes! Studies in each of these disciplines is impacted by standards and knowledge in this area would enrich students’ education.

And yet, most students have little to no exposure to standards in their undergraduate careers.

But the good news is that this is changing and SEC is helping.

- GATIC collaboration
- MOOC
The SEC offers grants of US $500 for students (per project) and US $300 for faculty mentors to help complete senior, undergraduate or graduate projects. Projects may be for design, capstone, development or research in which an industry technical standard(s) was applied to complete the project.

For students participating in the grant program, it is an excellent way to receive extra funding for student projects, to learn about technical standards necessary for their career development, and to have their final papers peer-reviewed by an IEEE committee.

Upon completion of project student submit a Final Student Application Paper. If paper is accepted it is published to the Student Application Papers website.

More information is at http://www.ieee.org/education_careers/education/standards/applications.html
Creating resources for academia has been a primary focus of SEC activity.

Professors will remain key stakeholders for this activity.

The IEEE Standards Education Committee is always looking for new leads. If you know of an academic either currently using standards in his/her classroom or interested in standards, please contact Susan Tatiner or Jennifer McClain.
Each installment highlights how an educator has included standards education in his or her discipline's curriculum.

- Lessons from Professors: What the IEEE Learned from Global University Outreach by Bruce Harding, Purdue University [2013]
- Teaching Standards in Biomedical Engineering by Dr. Jay R. Goldberg, Marquette University [2013]
- Teaching Standards in Communications by James Irvine, Strathclyde University [2013]
- Teaching Standards in Environmental Site Assessments by Dr. Angelo Lampousis, CUNY [January 2014]
- Teaching Standards In Networking and Data Communications by Dr. Maria Martini, Kingston University [April 2014]
- Teaching Standards in Biomedical Engineering Sciences by Prof. DI Dr. Stefan Sauermann [2014]

Published by John Wiley & Sons/IEEE Press in March 2015

Introduction on standards as a multidisciplinary activity: Technology, Economics, Politics

Description of the forces driving the initial development of the standard

Explanation of the process of development

Discussion of impact on the market, on technology

Applications of the standard in the real world

Chapter on Intellectual Property Rights

Selected SSOs described

**Purchase book through**


- **Amazon**

A curriculum guide is available to instructors who have adopted the book for a course. To obtain the guide, please send a request to: ieeeproposals@wiley.com

Curriculum Guide is available by request through Wiley to professors who purchase Modern Standardization for use in a classroom
- How to Use These Case Studies
- Assessments
- Assessment Guides
- PPT slides
Standards Education
Speakers Bureau

- Facilitating speakers on standards topics at conferences and workshops
- Recent events
  - **AFRICON 2015** (Proposing a “Demystifying IEEE 802 Standards” track)
  - **University of Leuven outreach - 2015** (Case study on IEEE 515) - **Belgium**
  - **EnergyCon 2014** (Standards speaker) – **Croatia**
  - **Kaleidoscope 2014** – **St. Petersburg, Russia**
  - **Capstone Design Conference 2014** – **Ohio, USA**
  - **IEEE Standardization and Innovation In Information Technology Conference 2013** – **Sophia-Antipolis, France**
  - **EUROCON 2013** (Standards session) – **Croatia**
Standards Education Videos

- Some videos developed in collaboration with China National Institute of Standardization, CNIS, to offer Mandarin translation
- Video run times range from 3-23 minutes in length
- Topics related to Innovation and Standards, the Value and Global Impact of Standards, as well standards development and the importance of standards as part of an engineering education. There is also a Case Study presented on IEEE Standards 515 (electrical trace heating), with a version translated into Mandarin.

- Guest Lecturer videos for classroom use:
  - Introduction to Basics of Standards now available
  - Geared for use in undergraduate classroom
  - 2 more videos to come soon

- More videos coming soon on IEEE 802®, NESC Summit
Standards Education Videos

All Videos Are Available On:

- IEEE Standards Education Video Channel on IEEE.tv
  https://ieeetv.ieee.org/channels/ieee-standards-education

- IEEE Standards Association Channel on YouTube
  https://www.youtube.com/user/IEEESA
Standards Education e-Magazine

- Freely available to the public, and has a worldwide audience of educators, students, and practicing professionals interested in technical standards and standards development.

- Contributions to the eZine are in the forms of …
  - Feature articles
  - Interviews
  - Video Series
  - Best of Final Student Application Papers
  - News briefs
  - The Funny Pages
  - Editor-in-Chief’s page
  - 4th Quarter 2014 issue: “Discover New Ways To Learn About Standards”

eLearning Modules

- 30-60 minute online learning modules in development
- Self-paced and includes short 10-question knowledge check test at end of module
- Topics in development:
  - Ethics in Standards Development and Application
  - How to a Read Standard
  - Conformity Assessment
- These next modules are to be released in November 2015 via IEEE Xplore®
Workshops on Technical Standards and Consensus Building are customized based on participants' needs and areas of interest.

- Appropriate for undergraduate and graduate students, educators and industry professionals in engineering, computing, technology, and business fields.
- Facilitated by industry professionals and standards development experts.

Participants can expect:

- To learn about the importance of standards in professional circles
  - The intersection of the technical, economic, societal, and political forces.
- To learn the fundamentals of how technical standards are developed.
- To participate in a unique hands-on activity simulating how standards are made.
IEEE Standards University
Innovation∙Compatibility∙Success

- Major multi-track project
- Three-year plan
- Some new, some expanded
Six Tracks

- **On-Line University Experience Track** (time frame: 1 year): Website development and improvements to greatly increase web traffic and improve navigation by pulling all websites under one umbrella.

- **Publication Track** (time frame: 3 years): The IEEE Standards Education e-Magazine is the flagship publication; publication of research articles in existing IEEE journals is another goal.

- **Massive Open Online Course (MOOC) Track** (time frame: 3 years): The MOOC, entitled “Standards: A Driving Force for Commerce,” is intended to help students develop a skillset around technical standards that enables them to compete more effectively in the global economy.

- **Standards Education Video Channel Track** (time frame: 3 years): Includes technical videos, interviews, and a Guest Lecture Series. Also in this track are eLearning modules.

- **Workshop Track** (time frame: 3 years): Expansion of successful face-to-face one-day training workshops for students, faculty, and/or professionals aimed at greatly increasing attendees’ knowledge of standards.

- **Standards Simulation Game Track** (time frame: 2 years): The only standards development simulation game developed by standards experts.
IEEE Standards University with End Dates for Tracks

Game 2017

Workshop 2017

Video 2017

MOOC 2016

Pub 2015

Web 2015

May 2015
Greetings, Earthlings... We’re going to colonize Mars!
Workshops on Technical Standards and Consensus Building
(Standards Development Simulation)

- Strathclyde University, Glasgow, Scotland, 19 February 2015
- Region 8 Student Branch & Young Professionals Congress, Krakow, Poland, 7 & 8 August 2014
- Strathclyde University, Glasgow, Scotland, 6 March 2014
- Louisiana State University, Baton Rouge, 1 Nov 2013
- City University, London, UK, 18 September 2012
- Train-the-trainer materials will extend the reach
The MOOC on *Succeeding through Understanding Global Standards Development* will offer a practitioners’ view of standards and standards development aimed at graduate-level students and educators in the fields of engineering, technology, and computing (ETC), business, economics, and law.

The course is designed to provide a comprehensive understanding of the intersection of economics, technology, and politics that is integral to standardization.

Delivered via edX over the course of six weeks by Jeffrey Strauss of Northwestern University, the Standards MOOC will provide a full survey of fundamental standardization themes:

- Introduction to standards and history, basic concepts and classifications, along with crucial topics like innovation, global markets, trade, implementation, conformity assessment, regulation, intellectual property, motivating factors in standards development, etc.
This method for delivering course content will be freely and widely available on mobile and non-mobile devices.

Students can “audit” the course at no charge or pursue a Certificate track for a reasonable fee.

If a university would like to run the Standards MOOC as part of a course for paid college credit, the IEEE will offer a license to the university in order to make that possible.

Content will be designed collaboratively by an instructional designer and a university professor with advisement from SEC and staff.

Course will contain video, audio, animation, and printed elements.

Course material will be delivered by the professor, along with guest lecturers who are experts in the fields of patents in standards and conformity, and assessment, among others.

There will be an interactive user forum that supports a common MOOC goal of building an ongoing community.
Policy Education Highlights

IEEE International Conference on Standardization and Innovation in Information Technology (IEEE-SIIT)

Standards Development Simulation Game

Technology Policy Programs @Universities

Collaborating with IEEE entities
### Access to IEEE Standards

- **IEEE Xplore**
  
  
  - Many universities subscribe to the full IEEE Xplore package, which includes IEEE Standards. Check with your university. You may already have full access.

- **IEEE Academic Tier Pricing**
  
  
  - Affordable solutions for smaller institutions that wish to subscribe to IEEE Xplore

- **IEEE Standards Select**
  
  
  - Offers customizable packages of IEEE Standards

- **IEEE Get Program**
  
  [http://standards.ieee.org/about/get/](http://standards.ieee.org/about/get/)
  
  - Through the IEEE-SA, Industry, and Government support, select IEEE Standards are available for download at no charge (includes 802, Design Automation, and other standards)
IEEE Get Program

- Through the IEEE-SA, industry, and government support, select IEEE standards are available for download at no charge.

- This program grants public access to view and download current individual standards at no charge.

- Superseded and withdrawn standards or in printed book and CD-ROM format can also be purchased from IEEE, along with drafts of standards through the IEEE.

- http://standards.ieee.org/about/get/
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<th>IEEE Get Program</th>
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<td><strong>GET 802® STANDARDS</strong></td>
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<tr>
<td><strong>GET 1622™ STANDARD: ELECTRONIC DISTRIBUTION OF BLANK BALLOTS FOR VOTING SYSTEMS</strong></td>
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<td><strong>GET DESIGN AUTOMATION STANDARDS</strong></td>
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<td><strong>GET 2600™ STANDARDS: HARDCOPY DEVICE AND SYSTEM SECURITY</strong></td>
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<td><strong>GET C95™ STANDARDS: SAFETY LEVELS WITH RESPECT TO HUMAN EXPOSURE TO RADIO FREQUENCY ELECTROMAGNETIC FIELDS</strong></td>
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## IEEE Standards Education

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<tr>
<th>Category</th>
<th>URL</th>
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<tbody>
<tr>
<td>Online Home</td>
<td><a href="http://standardseducation.org">standardseducation.org</a></td>
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<td><a href="http://standards.ieee.org/about/get/">http://standards.ieee.org/about/get/</a></td>
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CONTACTS

James Irvine
Chair, IEEE Standards Education Committee
j.irvine@ieee.org

Susan K. Tatiner
Director, Standards and Technology Policy Education
s.tatiner@ieee.org

Jennifer McClain
Program Manager, Standards Education, IEEE Educational Activities
j.mcclain@ieee.org