IEEE’s Position Paper on the role of Standards in Engineering Education

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IEEE Position Papers on Education

- From time to time IEEE publishes official position papers on education

- The objectives of these position papers are:
  - To inform IEEE volunteers of the official stance of IEEE on an important matter
  - To announce IEEE’s views to other organizations
  - To influence education policy by accreditation agencies and other policy making bodies
Recent Position Papers

- IEEE POSITION PAPER ON ACCREDITATION OF ACADEMIC PROGRAMS IN ENGINEERING, TECHNOLOGY AND COMPUTING

- IEEE POSITION PAPER ON THE FIRST PROFESSIONAL DEGREE IN ENGINEERING

- IEEE POSITION PAPER ON THE ROLE OF TECHNICAL STANDARDS IN THE CURRICULUM OF ACADEMIC PROGRAMS IN ENGINEERING, TECHNOLOGY AND COMPUTING
  - Defines the desired role of technical standards in engineering, technology, and computing within academic curricula in the technical areas of interest of IEEE
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Why was this position paper necessary?

IEEE has observed lack of familiarity of graduates from ECT programs with technical standards

- Many graduates get very minimal or no exposure to standards
- Academic programs often forgo resources that are available to them in the area of standards
  - Such as access to technical standards through IEEE publication package
- Students often submit a final project in their last year that does not use or refer to any standards
Audience for this Position Statement

- Academic institutions and programs in ECT
- Accreditation agencies
- Standardization bodies outside IEEE
Purpose

Define the desired role of technical standards in education within academic curricula
Standards (definition)

- Established norms or requirements
- usually available as formal documents that determine uniform engineering, technical, performance and interoperability criteria, methods, processes and practices

Among the uses of standards are
- the setting of specifications at the onset of a design
- defining constraints during the detailed design process
- serving as benchmarks during testing
Why is it important to teach Standards to engineering students?

- Standards provide **design tools**

- Standards document the **best of industry practices**

- Knowledge of standards would help students with their **transition from the classroom to workplace**
  - aligning educational concepts with real-world applications and market constraints
How to Integrate Standards in the Engineering Curriculum?

- By reference

- By indirect introduction
  - Introducing the principal technical specifications of a standard

- By direct use
  - Significant excerpts

- By regular use
  - Including student assignments and final-year projects
IEEE’s recommendations

- Exposition to standards by reference should become the norm
  - Textbooks should increase the use of references to technical standards

- Starting with the next-to-final year of study, students should see the principal technical specifications of several standards on a regular basis
  - In the classroom, homework, laboratories and projects
Final Year Design Project

- Students should use technical standards regularly in their final project

- Standards should be used as references in interim progress and final written reports

- Students should conduct a “standards search” in the area of their project
  - In the same way that students are required now to conduct a literature search and a patent search
The next steps

- IEEE is working with other standardization bodies to develop a joint statement on the role of standards in education in ECT

- IEEE plans to present its position paper for consideration by several accreditation agencies
  - The expectation is that these agencies would adopt the principles in the position paper in their accreditation criteria
Questions or Comments