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

Moshe Kam

IEEE President-Elect

Standards Education Committee

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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**

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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**

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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**

- **Bt regular use**
  - **Including student assignments and final-year projects**

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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