Developments in Engineering Education Standards: Advanced Curriculum Innovations

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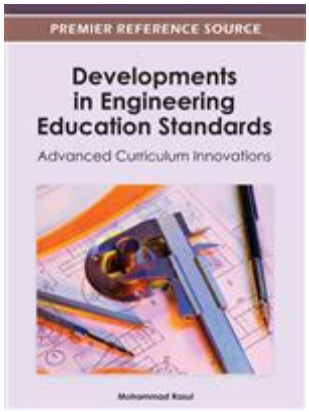

Description

Engineering education methods and standards are important features of engineering programs that should be carefully designed both to provide students and stakeholders with valuable, active, integrated learning experiences, and to provide a vehicle for assessing program outcomes. With the driving force of the globalization of the engineering profession, standards should be developed for mutual recognition of engineering education across the world, which is proving difficult to achieve.

Developments in Engineering Education Standards: Advanced Curriculum Innovations will address engineering educations standards for the development of models for engineering education standards, and a widely acceptable approach to the curriculum design and development. The reference is composed of academics, professionals, researchers, and students working in the area of engineering education.

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Preface

Last year I was inspired by Ashfaque Ahmed Chowdhury, my colleague, to edit a book in the area of Engineering Education. I was, I must admit, dubious about such a project, even though I have keen interest in it. I realised that contribution in the area of engineering education is equally important as contribution to engineering and scientific research. A few years ago, I was program advisor of undergraduate mechanical engineering program and coordinator of final year engineering project/dissertation where I started my research in engineering education. Even though, I have done some engineering education research including development of benchmarking guidelines for assessing final year engineering projects for academic staff and students, my scepticism deepened as I thought more about the project as an editor. Anyway, I accepted the challenge and responsibility with a question to solve: how do I make this book useful and needed for engineering education?

A big challenge was to find contributors who, as I wrote to them for soliciting contributor, have 'potential or wish to write' any constructive and useful features of engineering education. Contribution must be original and not previously published.

Engineering education methods and standards are important features of engineering programs that should be carefully designed both to provide students and stakeholders with valuable, active, integrated learning experiences, and to provide a vehicle for assessing program outcomes. With the driving force of the globalization of the engineering profession, standards should be developed and practiced for mutual recognition of engineering education across the world, which is difficult to achieve. This edited collection demonstrates this and reports on the standards and quality of engineering education.

This book broadly addresses engineering education standards and provides information on: (1) innovations in curricula, (2) outcomes- and competency-based engineering programs and education, (3) project-based learning and teaching of engineering programs, (4) graduate attributes, competencies, and skills in engineering education, (5) assessment practices and methodologies used in engineering learning and teaching, (6) results of pilot investigations on issues and best practices for assessing engineering projects, and (7) quality assurance and globalization of engineering programs. The overall outcome of this book is the standards used for engineering education across the world and a widely acceptable curriculum, and learning and teaching practices for engineering programs.

The book is suitable for academics, professionals, and researchers and students in the area of engineering education.

This is really a challenging task to arrange and define sections of the book because of the varieties of contributions received from the authors. The result of my solicitations is a book of 17 chapters, which I have divided into 3 sections. Each section has a separate introduction that tells about what is in that section, which helps provide the continuity of the book. In short, the first section introduces curricula and graduate attributes. The second section discusses technologies used for learning and teaching. The final, section 3, presents generic courses and community involvement in engineering education. While the titles of these 3 sections may be, in some cases, a bit unorthodox for this book, I believe that the flow of the materials will feel comfortable for the audience of this book.

All the chapters have been double blind peer-reviewed in addition to initial review and short listing by the editor. The authors had to address those comments and suggestions made by the reviewers' before they were accepted for publication in this refereed book.

The editor of this book would like to express his sincere thanks to all the authors for their high quality contributions and reviewers for their effort in providing useful and constructive comments and suggestions. The successful completion of this book has been the result of cooperation of many people, including the editorial board members of this book. I would like to express my sincere thanks and gratitude to all of them.

Initially, I defined the book and developed proposed contents which were revised by a panel of IGI Global lead by Erika Carter, Acquisitions Editor, to come to the final theme of this book. From the beginning to the final stage of this book, I have been supported by editorial assistant, Myla Harty, at IGI Global for completing the publication process. I would like to express my deepest sense of gratitude and thanks to all of them at IGI Global.

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