Handbook of Research on Recent Developments in Materials Science and Corrosion Engineering Education

Part of the Advances in Chemical and Materials Engineering (ACME) Book Series

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Description:

The Materials Science and Engineering (MSE) discipline is highly dynamic and has undergone many changes in response to revolutionary inventions and improved technologies (polymers, ceramics, nanomaterials, metamaterials, etc.) that are extensively documented in engineering publications available in the market. These changes in the discipline have invariably filtered down to impact the structure and content of MSE educational and training programs. Yet there are no significant publications that encapsulate the recent developments and trends in MSE education. The purpose of this edited book is to fill this gap by disseminating the challenges and successes in the development of innovative, effective instructional approaches for MSE education and training that can produce the next generation of skilled engineering professionals to solve global materials problems. This book satisfies a long-felt need among academics and practitioners for such a pedagogical resource, and creates a sustained interest in the future of MSE education.

The book is divided into four sections with 21 chapters:
- Section 1 Theme: Innovations in Materials Science and Engineering degree course curricula.
- Section 2 Theme: Incorporating information technology into Materials Science and Engineering and Corrosion Education.
- Section 3 Theme: Interdisciplinary approaches in MSE teaching and training.
- Section 4 Theme: Engineers at work: Professional skills and career development


Topics Covered:
- Teaching “Design-for-Corrosion”
- Innovative Materials Capstone Courses
- Materials Design and Manufacturing Challenges in the Automotive Industry
- Interdisciplinary Project-Based Infrastructure Degradation Curriculum
- Green Inhibitors for Corrosion: Research and Education
- Virtual Environments in Materials Science and Engineering
- Artificial Intelligence and Applications in Civil Engineering
- Digital Libraries in Teaching Materials Science and Engineering
- Nanostructured Materials Science and Engineering
- Materials and Mechanics
- Sustainable Engineering Principles in Material Science Engineering Education
- Health, Safety and Environment (HSE) through Design
- Arabian Gulf Materials Programs
- Cultural Heritage Career Paths in Materials Science and Corrosion Engineering
- Introducing Professional Skills into the Engineering Curriculum
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