THE Engineering Criteria 2000 of the Accreditation Board for Engineering and Technology (ABET) stipulate that graduates of engineering programs have:

1. an ability to apply knowledge of mathematics, science, and engineering
2. an ability to design and conduct experiments, as well as to analyze and interpret data
3. an ability to design a system, component, or process to meet desired needs
4. an ability to function on multidisciplinary teams
5. an ability to identify, formulate, and solve engineering problems
6. an understanding of professional and ethical responsibility
7. an ability to communicate effectively
8. the broad education necessary to understand the impact of engineering solutions in a global and societal context
9. a recognition of the need for, and an ability to engage in, life-long learning
10. a knowledge of contemporary issues
11. an ability to use the techniques, skills, and modern engineering tools necessary for engineering practice

These criteria are widely recognized as a mandate for professional training for engineers that goes beyond merely technical specialties. In recent decades, however, the overwhelming focus of engineering education has been on just that—creating engineering practitioners who are more specialized. As a result, few resources have been developed to address the breadth stipulated in the new ABET criteria.

The primary purpose of this book is to provide such a resource for engineering educators, students and practitioners, especially with respect to ABET criteria 6, 8, and 10: an understanding of professional and ethical responsibility, the broad education necessary to understand the impact of engineering solutions in a global and societal context, and a knowledge of contemporary issues. Professional and ethical responsibility is a thread that runs throughout this volume. Unlike most conventional treatments of engineering ethics, however, I have endeavored to demonstrate the theoretical and practical linkages between engineering ethics and issues that might more broadly be identified as social implications of technology. Hence, significant attention is given to the impact of engineering solutions in a global and societal context and contemporary issues, particularly policy and ethical issues relating to the development and use of technology.

A secondary purpose of this work is to anthologize some of the significant articles published in IEEE Technology and Society Magazine (T&S) over the past 17 years. All of the background readings and cases for discussion are reprinted from T&S, a publication of the Society on Social Implications of Technology (SSIT) of the Institute of Electrical and Electronics Engineers (IEEE). IEEE-SSIT recently celebrated its 25th anniversary (having begun as the Committee on Social Implications of Technology in the early 1970s). The reader will find that the vein of articles mined from T&S over the years is consistent with my approach to integrating conventional treatments of engineering ethics with social and policy analysis. Many of the articles taken from the 1980s focus explicitly on theoretical and applied aspects of engineering ethics, whereas more recent articles, though often grounded in ethics, are more oriented toward contemporary social issues and policy problems arising from the prominence of technology in society.

The book is organized in three parts, dealing respectively with the social, ethical, and policy contexts of engineering. Each part has two or more chapters with each chapter consisting of an extended introduction, one or two background readings reprinted from T&S, and one or two readings from T&S that contain specific case studies. The activities of SSIT and the scope of T&S are so wide ranging that the articles published in T&S and reprinted here should be of interest to all engineers, regardless of technical specialization, as well as others interested in the social, ethical, and policy implications of engineering.

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