Preface

T
JL HE 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 engi-neering problems
6. an understanding of professional and ethical responsi-bility
7. an ability to communicate effectively
8. the broad education necessary to understand the im-pact 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 pro-fessional training for engineers that goes beyond merely technical specialties. In recent decades, however, the over-whelming 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 prac-titioners, especially with respect to ABET criteria 6, 8, and 10: an understanding of professional and ethical responsi-bility, the broad education necessary to understand the impact of engineering solutions in a global and societal context, and a knowledge of contemporary issues. Profes-sional and ethical responsibility is a thread that runs throughout this volume. Unlike most conventional treat-ments 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, sig-nificant 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 Technol-ogy 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 be-gun as the Committee on Social Implications of Technol-ogy 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 is-sues and policy problems arising from the prominence of technology in society.
The book is organized in three parts, dealing respec-tively with the social, ethical, and policy contexts of engi-neering. 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.

Joseph R. Herkert
North Carolina State University

IX