

Part Four

Special Topics

This last part of the book is concerned with six topics that the Accreditation Board for Engineering and Technology (ABET) has recently indicated should be included in any engineering curriculum. The contents of these chapters are briefly described below.

Chapter 23 is concerned with Environmental Management; this chapter contains a broad discussion of environmental issues facing today's engineers and scientists, and presents some of the more recent technology to deal with the issues at hand. Chapter 24 is concerned with Accident and Emergency Management; it deals with ways to ensure both employee and public safety, the determination of the severity of accidents, and determining the causes and potential causes of accidents. Chapter 25 is concerned with Ethics; the case study approach is employed to make the reader think about the ethical questions involved, to reflect on their past decisions, and to project forward to their future decisions with a higher degree of thought and insight when faced with an ethical dilemma. Chapter 26 is concerned with Numerical Methods; a brief overview of numerical methods is given to provide the practicing engineer and scientist with some insight into what many of the currently used software packages (MathCad, Mathematica, MatLab) are actually doing. Chapter 27 is concerned with Economics and Finance; this subject area provides material that can ultimately dictate the decisions made by the practicing engineer and his/her company. Finally, Chapter 28 introduces the reader to Open-Ended Questions; although engineers at their very essence are problem solvers, most problems in real life do not come fully defined with a prescribed methodology to arrive at a solution. These open-ended questions are exercises in using brain power—and like any muscle, you use it or lose it. The author believes that those who conquer or become adept with this topic will have taken the first step toward someday residing in an executive suite.