ETHICAL RESPONSIBILITY AND SOCIETAL CONTEXT: INTEGRATING ETHICS AND PUBLIC POLICY CONSIDERATIONS IN THE ENGINEERING CURRICULUM

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Abstract – ABET’s Engineering Criteria 2000 requires that graduates of engineering programs “have... an understanding of professional and ethical responsibility” and “the impact of engineering solutions in a global and societal context.” Curriculum models aimed at simultaneously addressing professional and ethical responsibility and the societal context of engineering have been successfully implemented at a number of institutions. A useful teaching method for addressing these two criteria in an integrated manner involves broadening discussions of engineering ethics so as to include the ethical implications of public policy issues in such areas as risk and product liability, sustainable development, and healthcare.

ABET’s Engineering Criteria 2000 (EC 2000) requires, among other outcomes, that “engineering programs must demonstrate that their graduates have... an understanding of professional and ethical responsibility” and “the broad education necessary to understand the impact of engineering solutions in a global and societal context.” Traditionally, engineering ethics instruction has focused on microethical problems—dilemmas confronting individual engineers—to the neglect of macroethical issues confronting the engineering profession as a whole. While engineering students sometimes lack appreciation for the importance of engineering ethics, there is reason to believe that they have both the motivation and ability to engage material that deals with the social context of engineering. These factors suggest that a fruitful curricular approach would be to aim at simultaneously addressing professional and ethical responsibility and the global and societal impact of engineering solutions. [1]

Successful curriculum models in line with this approach that rely on specially designed courses have been implemented at the University of Virginia [2] and at Drexel University [3]. The University of Michigan’s ethics-across-the-curriculum initiative also focuses explicit attention on the interrelationship of technology and society [4].

A useful teaching method for achieving integration of engineering ethics and engineering’s societal context is to broaden discussions of engineering ethics so as to include the ethical implications of public policy issues relating to engineering or the development of technology. Suitable content areas include risk and product liability, sustainable development, globalization, healthcare, and information technology [5]. For example, the duality of risk and safety, and the clear ethical issues involved in determining acceptable risk are central to most treatments of engineering ethics. Less obvious to engineers and engineering students, however, are the ethical issues involved in determining or measuring risk and the ethical issues raised by differences in risk perception between technical experts and ordinary citizens. Many of the cases typically used in engineering ethics courses are amenable to discussion of public policy issues (e.g., the Ford Pinto case and the DC-10 case); other, lesser-known cases, such as the Bjork-Shiley heart valve [6], also have significant public policy implications.

In addressing two required outcomes of EC 2000, an integrative approach increases the likelihood that significant room for this material will be made in the crowded engineering curriculum. Most importantly, a model that places individual ethical responsibility within the broader framework of the social and policy contexts of engineering is responsive to the interests and aptitudes of engineering students, while at the same time acknowledging the interdependence of an engineer’s ethical responsibilities and the social responsibilities of the engineering profession.

References


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