

WHAT DO EMPLOYERS WANT OF GRADUATING UNDERGRADUATE ENGINEERS?

INDE499B: Information Systems

Dr. Jennifer Turns

Autumn 2000

What do employers want or expect of graduating undergraduate engineering students? This is clearly an important question -- an answer can help (a) engineering **students** to evaluate the effectiveness of their education and take steps to ensure that their education adequately prepares them for future work, (b) engineering **schools** to evaluate the effectiveness of the education they are providing to the students and make necessary changes, and (c) **employers** to get what they want.

Of course, such an important question is not easy to answer. For example, employers can have very different priorities (e.g., UPS and Motorola may have different expectations). Also, answers for one engineering discipline (e.g., industrial) may differ from answers for another discipline (e.g., mechanical).

Despite these challenges, there is at least one answer – that made available by the accreditation board for engineering and technology programs (ABET). This board functions as a mediator between the engineering community and the engineering schools – accreditation is a process for ensuring that engineering schools are providing engineering graduates that meet needs. The answer, given in the box below, is known as ABET (a)-(k) or EC2000.

Graduating engineering students should be able to demonstrate the following proficiencies¹:

- (a) an ability to apply knowledge of mathematics, science, and engineering
- (b) an ability to design and conduct experiments, as well as to analyze and interpret data
- (c) an ability to design a system, component, or process to meet desired needs
- (d) an ability to function on multi-disciplinary teams
- (e) an ability to identify, formulate, and solve engineering problems
- (f) an understanding of professional and ethical responsibility
- (g) an ability to communicate effectively
- (h) the broad education necessary to understand the impact of engineering solutions in a global and societal context
- (i) a recognition of the need for, and an ability to engage in life-long learning
- (j) a knowledge of contemporary issues
- (k) an ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.

Of course, this type of answer creates a host of new questions, such as the following examples. What exactly is meant by design? What range of behaviors count as communication? How does one measure lifelong- learning skills? Is having students “understand” ethical responsibility a sufficient goal – or should they be expected to know how to behave ethically? At the same time, such questions show the power of the answer – we are asking these important questions because of the answer!

¹ Adapted from material on the ABET website at www.abet.org.