

Engineers Deserve a Liberal Education

As much as or more than for any other career, engineers need the benefits of a liberal bachelor's education. Other professions have recognized this need for many years. It is time for engineering to change to the master's as the professional degree. Bachelor's education should then be modeled after pre-medical education—a set of generally required courses within the context of a liberal arts bachelor's degree, with a wide choice of majors. I have presented this proposal and the rationale for it in more detail elsewhere.

Some of the drivers for this change are

- Engineers need the flexibility to move among careers—to management, public service, or out of the engineering profession altogether.
- Engineers must interact effectively with people of different backgrounds and with the public on issues such as environment, energy, food supply, water supply, and national security.
- With instant broadband communication and access to information, these days “the world is flat.” Straightforward engineering jobs are going overseas, leaving U.S. engineers with more complex, interactive jobs and the need to understand and work closely with other cultures.
- There is simply more to be had from life if one has a broader background and interests.

All these factors call for a broader engineer, with more understanding of society and the human nature and condition.

Engineering is the only major profession with the bachelor's degree as the first professional degree and accreditation primarily at that level. **Other professions, such as medicine, law, business, architecture, planning, journalism, and public health, build upon a liberal arts bachelor's degree.**

To its credit, ABET has recently sought more breadth in undergraduate engineering education. But the problem is that a nominally four-year bachelor's degree is just too small a box in which to package both a professional engineering education and an adequate liberal education.

Some will say that fewer students would enter engineering because of the prospects of longer time and more

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cost. But the change will also enable students to make a much more informed choice as the end of the bachelor's degree approaches. Breadth and the opportunity for a delayed commitment should bring more students to consider engineering seriously, especially women and minorities. The community college transfer route will be much more attractive and workable. The added time and cost are excellent investments for a future career, and the time is offset by the fact that most engineering students now take well over four years to complete their degree. The change to model pre-medical education may actually increase the number and diversity of engineering students.

Some pre-engineering bachelor's graduates will not proceed onward to the professional master's. They will still have good options, including other professional degrees and jobs linking engineering with other functions. They will contribute toward the goal of a technologically literate population.

Some will observe that there is a strong industrial demand for bachelor's engineers. But here the interests of corporations and individuals diverge. Corporations will gladly hire engineers for entry-level functions when the openings are there. Individual engineers need to enhance their flexibility and opportunities for moving to different functions as their career develops and/or as the economic cycle turns downward.

Still others will observe that it will be difficult to make this change. But medicine and law did it in the early parts of the last century. Surely engineering—the problem-solving profession—can find the way to make the change.

My class at Yale had its 50th reunion this year. In the reflective 50-year class book, one of our number observed and regretted that he had “missed his Yale education” because of having majored in engineering. With the change that I am urging, he would have had that education. p