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Study Shows Increase in Graduates' Skills

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Students who graduated from college engineering programs in 2004 were better qualified to enter the profession than were students who graduated in 1994, according to the results of a study released last week at the annual conference of ABET, the national accrediting association for engineering and computing programs.

The three-year study, which assessed graduates of undergraduate engineering programs at 40 American institutions, was commissioned by ABET and conducted by Pennsylvania State University's Center for the Study of Higher Education. It concluded that changes in ABET's accrediting standards played an important role in the improvement.

The new standards represent a move away from the traditional accrediting approach, based largely on measuring classroom hours, faculty qualifications, lab equipment, and other "inputs." **The new approach, phased in from 1996 to 2001 under the label "Engineering Change 2000," puts more emphasis on assessing the skills and competencies that graduates can demonstrate.** Eleven engineering skills and learning outcomes are measured under the new standards, including such nontraditional ones as the ability to understand the environmental and societal effects of engineering projects.

The 2004 graduates had higher test scores in mathematics and science than did the 1994 graduates. The new standards "depend more heavily on 'soft skills,' like teamwork, oral and written communication, and appreciating the global context of engineering solutions," said George D. Peterson, ABET's executive director. "But they have not come at the expense of technical competencies of graduates."

The ambitious study cost almost \$2-million and was financed by ABET and a grant from the National Science Foundation. In addition to comparing students' grades and test results, researchers surveyed key groups. The survey drew responses from 5,500 students who graduated in 1994 and 4,300 who graduated in 2004; from 1,200 faculty members, including 150 program chairs and 40 engineering deans; and from 1,622 employers over all.

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