



Biz-gineers: Engineering, business students rub shoulders to share skills

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By Charles Sheehan, The Associated Press

A number of universities are trying to solve a problem that has perplexed American business for decades -- how to get engineering and business majors speaking the same language.

The two rely on one another post-graduation to create product and then to sell it. But as Penn State-Behrend learned during hundreds of interviews with alumni and the companies that hired them, engineers and business majors operate in "academic silos" that can lead to damaging communication breakdowns.

The school is building a \$30 million academic hall at its Erie campus to force business and engineering undergrads to rub shoulders before they enter the corporate world and learn how much they can rub each other the wrong way.

"At educational institutions countrywide, you see this sort of collaboration occurring at the graduate level, but not at the undergraduate level," said Ken Fisher, assistant director at Behrend's school of engineering and a professor. "We set out to find how many schools were trying to get both sides talking, and the answer was not many at all."

The school is not the first to link programs, but is taking the added step of designing a hall that puts undergrads, and just as importantly, faculty, under the same roof. The 160,000-square-foot Research and Economic Development Center is expected to be completed in 2006.

Faculty from a handful of schools that have linked at least portions of undergraduate schools met at Behrend this year to discuss what has worked, what hasn't, and why it may be more important than ever for engineering students to familiarize themselves with the business side of business.

An issue that came up repeatedly during the two-day meeting was the offshoring of white-collar jobs.

Though no hard data exist to quantify how many engineering jobs have been off-shored, university officials and industry groups say it is now common.

The University of Illinois has allowed its top engineering students to work collaboratively with business students for about a decade, a decision that has increased the attractiveness of those graduates to American companies, said Russ Jamison, a bioengineering professor and

director of the technology and management program.

"It's not what we set out to do 10 years ago, but I think it's more relevant now, and if a student can show value in a more integrated way than being a hotshot engineer, it's a lot more difficult for a company to ignore," he said. "Technical skills and design ... that can be sent elsewhere; but it's really difficult to imagine that anyone can offshore the essence of management."

There are other trends suggesting a familiarity with marketing and business structure might increasingly benefit engineering students.

The number of small businesses rose 10 percent from 1993 to 2003, according to figures from the U.S. Small Business Administration. At many of these firms, a separate research and development wing is simply not a reality and engineers with a wider grasp of finance can be invaluable, experts said.

"The largest growth sector is in small business," said Diane Parente, associate professor of management at Behrend's Black School of Business. "While many of these are very technical start-ups, they can't afford to hire someone who can do only one thing."

A pilot program at Behrend focusing on entrepreneurship pairs business and engineering students who turn technical ideas into start-ups. The course is taught by faculty from both schools.

Amber Wildfire, who graduated in December, participated in the program.

"Engineers are technical and we talk technical," she said. "Business students could not understand what we were talking about, and it was clear that this could become a problem. The experience was valuable."

Wildfire's husband graduated from a traditional engineering program and learned by trial and error at his first job, she said.

The schools that have integrated programs have varying methods of dealing with the heavy credit loads that are a necessity to maintain accreditation at business and engineering schools.

The U of I program requires an extra semester or two to fulfill an additional 22 credit hours needed for a minor. And only "the cream of the crop" is accepted, perhaps 40 students each year, said David Daniel, dean of engineering.

"We've found that communication barriers dissipate when the students rub elbows," he said. "We find that business majors get more quantitative by the day, and in the same token, a lot of engineering students move into fields that are pure business application."

Behrend is still offering a pilot program and courses as electives, but will create a minor in business for engineering students near the time the new hall opens, said Fisher.

At Clarkson University in Potsdam, N.Y., it's simply a tough slog for students in the engineering and management program.

Students get four electives as they fulfill the required 49 hours of mathematics, science and engineering, 43 hours of business and 18 hours of humanities and social sciences, said Mike

Ensby, director of the program.

The dual-track program is applicable to both Fortune 100 companies and start-ups, Ensby said.

"You can't bemoan the offshoring that's going on because it's natural evolution," he said.

"What is going to sustain this country is innovation, the same thing that sustained it through the Industrial Revolution. I'm talking about a whole new skill set that can get the product to market first."

[Back](#)

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