

# Program helps teachers learn to teach engineering skills

By Harlan Levy  
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Twenty-four high school and community college teachers from throughout the state and the nation spent last week at the U.S. Coast Guard Academy in New London learning ways to help inner-city high school students pursue education and careers in science, technology, engineering, and mathematics.

The Engineering Challenge for the 21st Century program, developed in 2003, focuses on practical projects, technical communication, and organizational and interpersonal skills combined with professional and life skills such as teamwork, understanding human behavior, and personal accountability.

In the five-day workshop the teachers learned how to integrate practical and relevant methods and activities into their school year classroom work.

For instance, one day the challenge for the teachers was to participate in the Coast Guard Academy's "Robotics On the Water" program by designing and building small floating robots — 2-inch-thick 18-inch-long plastic foam boat-like structures with rotating metallic arms — that can scoop up oil and do other clean-up work that could be related to the oil spill in the Gulf.

Another day the teachers built and raced 6-inch cars powered by hydrogen fuel cells.

Other projects involved climate change and the dependency on fossil fuels.

With more coursework responding to industry needs, the community colleges are turning out more students on a science and technology path, says Karen Birch, executive director of the Connecticut College

of Technology's Regional Center for Next Generation Manufacturing, which provides funds for the program and the workshop.

"We've seen a significant increase in enrollment in our engineering technology disciplines and engineering science for associate degrees over the last four years," Birch says. "It's been going up about 6 percent per year."

Last fall the state's 12 community colleges had 1,400 full-time students in both degree programs.

Mehrdad Faezi, a professor of engineering and technology at Manchester Community College, sees progress in attracting and educating two types of students — those headed to industry jobs after getting two-year degrees and those going on to four-year schools in science and technology.

"We've seen a surge of students coming in to the two-year program in engineering or technology fields," Faezi says. "I've seen a dividend: Because of the business environment a part of them is totally focused on getting into a four-year program, and I see more of people looking for certificates and apprenticeships to get them ready for the workforce right now."

Surveys show that businesses are more satisfied with the quality of young job-seekers than in past, Birch says.

"We're doing a much better job of graduating student with the skills identified by industry," Birch says. "Without question, all 12 community colleges are graduating more students that have the necessary skills that industry has been crying for, and when they are hired they can truly hit the ground running with a technology engineering skill as well as the soft skills."



Engineering Challenge for the 21st Century

In the Coast Guard's Robotics on the Water program, teachers work small floating robots they designed.

One topic the summer workshop concentrates on is helping teachers teach those "soft" skills, including leadership, teamwork, creative thinking, understanding other people, and oral and written communication and technical writing.

"The business community is looking for people who have those professional skills," says John Birch, executive program director

of Engineering Challenge for the 21st Century.

As for specific industry job prospects, Birch says, "There is a need for engineering and technology workers in the defense and environmental and green engineering areas. Those are areas that will be clamoring for qualified workers."

The Engineering Challenge pro-

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