

Area Schools Heed Science Industry's Warning

PSM Degree Programs Aim to Produce Business-Savvy Workforce to Keep U.S. Tech Sector Competitive

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Universities in the Washington region are in the forefront of a movement to train more people to enter science and technology professions and meet what industry leaders call an urgent need to expand the workforce to keep the U.S. economy competitive.

At least eight schools in Virginia, the District and Maryland are offering or drawing up plans for a two-year professional science master's degree. The PSM program is designed to provide more advanced training in science or mathematics -- with a dose of business skills -- and entice more students who receive bachelor of science degrees to stay in the field without having to pursue a doctorate. Most college graduates with four-year science degrees leave the field and don't return.

The PSM degree, sometimes described as a science version of the MBA degree, is being hailed as one of the most promising innovations in graduate education in years. Last year, Congress provided funding for schools to establish or improve PSM programs through the America Competes Act. *[see Correction below]*

"This has national implications for leveraging our academic resources and our professional talent to deliver economic health for the nation," said Richard G. Donnelly, chairman of the department of information systems and technology management at George Washington University and co-director of the school's PSM program.

GWU launched its molecular biotechnology master's program in the fall, and Towson University will graduate its first class of 28 students in the forensic science PSM program in the spring.

American University began a PSM program in 2004 with three branches: biotechnology, applied computing, and environmental science and assessment. The University of Maryland recently launched several offerings, and Georgetown University is sponsoring with Virginia Tech a PSM program in biomedical technology, development and management that will begin in the fall. Virginia Commonwealth University in Richmond has a PSM program in bioinformatics.

"I want to join the biotechnology industry, and I looked around the world for the right program," said Mandeep Kaur Gill, who received a bachelor of science degree and a master's in biology in her native India and is in GWU's program.

"This had everything," she said, including opportunities to study science, business, marketing and computer science.

In 1997, as industry leaders complained that U.S. schools were not producing enough properly trained graduates to enter the science and technology fields, the Alfred P. Sloan Foundation began to encourage schools to take a new approach.

Providing seed money for master's programs in science and math, the New York-based foundation set guidelines that provide schools some structure but also offer flexibility. Universities have long offered advanced training in these fields. But the program requires more work across disciplines and business

training to help make graduates marketable. Sloan left engineering out of its grant specifications because, said Carol B. Lynch, PSM director at the Council of Graduate Schools, "engineers get it and already understand the value of a master's degree."

About 1,300 students are enrolled in PSM programs at more than 50 schools nationwide, officials say. The programs have graduated 1,200. The Washington area has the most programs, Lynch said.

That it took a foundation, and not a school, to get the ball rolling is not entirely surprising, educators said, despite a broad agreement that the country needs more trained scientists.

PSM supporters expected -- and met -- resistance from some educators, who thought the science course requirements were too limited or who did not want PSM students in their classrooms because they didn't think the students had done the prerequisite courses.

In addition, universities are tradition-bound institutions. It can be difficult for schools, especially state-run systems, to get approval to start something new. Schools don't like to force experts in one field to change their focus or unwillingly collaborate outside their discipline.

"In general, institutions of higher ed pay lip service to interdisciplinary studies," said Ali Eskandarian, an associate dean at GWU who oversees its PSM program.

Eskandarian said GWU leaders backed the initiative, which could help boost the workforce for the prospering technology corridor in Maryland and the growing technology presence in Northern Virginia. He said Donnelly and physicist Mark E. Reeves created a true interdisciplinary program, sometimes sitting in each other's classes to offer different perspectives.

Reeves said he teaches the physics component -- the physics of biotechnology -- in an unorthodox way. Ninety percent of physics courses deal with inanimate systems, he said, but his course looks at living systems.

The physics component attracted Srishti Jain, who said she considered programs in California, Boston and elsewhere before deciding on GWU's combination of science and entrepreneurship.

"This is actually the future of biotechnology," she said.

At Towson, officials chose forensic science for the new degree because of the growth of the homeland security industry and the demand for 10,000 more forensic scientists over the next decade, said Mark Profili, the school's PSM director.

The degree was initially confusing to many students, educators say, and might still be.

"People didn't understand what it was," said Christopher Tudge, a professor who directs American's PSM program. "Students wanted to know if they had to get a PhD after this."

He added: "Once the brand-new gets out there and people realize what its specific function is, I think it is going to be a very popular program in all schools."

CORRECTION

This article incorrectly says that Congress has provided funding for colleges to establish or improve professional science master's degree programs through the America Competes Act. The act calls for funds for PSM programs but does not provide any money.

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