The Business of Science

An unconventional career track at the intersection of science and business offers a bachelor of science degree a new world of possibilities.

There is much talk these days of the need for young people pursuing college degrees to seriously consider science. After all, basic scientific research is at the heart of advances in biosciences and medicine, computing, power generation, the development of novel materials, and the myriad other technologies that sustain our lives and our civilization. The reality, however, is that many students who come away from college with a bachelor’s degree in the sciences do not go on to earn the advanced degrees necessary to enter into research and development. Some are not interested in becoming researchers, and others simply are not suited to a life in the lab.

What, then, can these students do with a bachelor’s degree in science? A great deal, it turns out. A 1997 survey by the Alfred P. Sloan Foundation found that science- and technology-oriented businesses need more employees who combine an understanding of science with skills in business and communications. At the time, there were few, if any, academic programs offering a curriculum that melded science with business, so the foundation began offering seed money to universities to develop what have come to be called professional science master’s programs. Rice took to hear the Sloan Foundation’s call to action and, in 2001, became one of the first universities to develop a professional science master’s program.

“The idea is to give another option to students who love science but really don’t want to do research,” said Dagmar Beck, director of Rice’s Professional Science Master’s Program, who has been with the effort since it began enrolling students in 2002. “Students who choose science for a bachelor’s degree most likely don’t get jobs in science-related industries without an advanced degree. Rice’s program helps them develop business and communications skills that, in conjunction with their scientific knowledge, open up job opportunities.”

The general recipe for the two-year program is 70 percent advanced science and 30 percent core courses comprising a management course; a science, policy and ethics course; special communication training; a capstone course; and an internship. Students also can take specialized elective courses, such as finance or accounting, at the Jesse H. Jones Graduate School of Business.

The semester-long internship is a vital element that excites students. “A lot of them choose the program because of the internship,” Beck said. “They feel they need more practical experience, and the internship is a wonderful opportunity for them to get into the marketplace and see how their course work applies to a real job.”

Employers like it, too, because it gives them a way to preview job candidates. The majority of students get job offers from their internships, and most accept them, while others keep on looking. “We’ve had a few students who’ve decided, say, that consulting isn’t really what they want, and they might then look at nonprofits or government,” Beck said. “One of our graduates is working with the city of Houston under the mayor in the environmental department.”

Three Tracks

When Rice began to develop its professional science master’s offerings, it was important to target areas that promised the greatest returns on the investment, and three fields showed the highest potential: environmental analysis and decision making, nanoscale physics, and subsurface geoscience.

The majority of graduates from the environmental program go to environmental consultancy companies, and most have remained in the Houston area. “We work with a great assortment of environmental companies in Houston,” Beck said, “and we’re starting to make inroads with the big oil companies, too. Chevron Corp. just hired one of our interns.”

Beck has found that the program has been successful at placing nanoscale physics students with larger companies that have multiple divisions where the skill sets of professional science master’s graduates can find a fit. Currently, the nanoscale program is based on areas in physics such as advanced materials, photonics and electronics-related nanotechnology, but Beck would like to further diversify it with offerings in biotechnology, biochemistry and bioengineering to open up even more opportunities.

The subsurface geoscience graduates primarily go into oil and gas. “We’ve had favorable feedback...
from many oil and oil exploration companies,” Beck said. “They have been really excited about our students and have hired a lot of them. In fact, the recruiter at Shell Oil Company is one of our graduates.”

**Raise in Status**

Rice may have offered one of the first professional science master’s programs when the initiative began, but things are changing rapidly. Now, similar programs have been developed at universities across the country.

In 2006, the Council of Graduate Schools, the only national organization in the United States that is dedicated solely to the advancement of graduate education and research, began lobbying the government to have professional science master’s program degrees formally recognized in the United States. The council also held conferences and set up meetings for program directors to meet and exchange ideas.

Out of that synergy grew the National Professional Science Master’s Association (NPSMA), which was established in 2008. “The Council of Graduate Schools has a lot of constituents to look after,” Beck said. “We wanted to create an association that would be a voice for the programs, assist alumni and help universities that want to develop new programs.”

From its initial membership of 13 program directors and deans, NPSMA today consists of 70 universities plus several statewide systems. “California implemented statewide professional master’s science programs at all of their facilities and so have the New York State system and the North Carolina State system,” said Beck, who was elected to NPSMA’s board this year. “Florida is in negotiations to add 24 more programs at their different state universities. As more people become involved, the goals are getting more refined, and we’re working on a strategy for the organization.”

The federal government has taken notice, too. Although funding from the Sloan Foundation may taper off now that the ball is rolling, professional science master’s programs are recognized in the federal stimulus package to the tune of $15 million. “Of course, all the programs will apply,” Beck said, “so there is stiff competition.” If Rice is a recipient, Beck hopes to be able to embellish the program with student stipends, and she also would like to add two tracks to the existing three.

One of these would be a professional science master’s in integrated energy studies. As a matter of fact, the U.S. Department of Energy has funding available for universities that are starting such programs, and a professional science master’s in energy would dovetail with the energy policy focus at the James A. Baker III Institute for Public Policy as well. The second new track — science and technology policy — also would be a cooperative effort with the Baker Institute. “We’d pick focus areas, like health or nanotech or environment, and would still require the science background, but instead of training students in business, we would train them in policymaking.”

‘A Neat Environment’

The national growth of professional science master’s programs is matched by increased interest among students. Conventional wisdom says that when the economy slumps, people go back to school. For the Rice professional science master’s program, this certainly has been true. Originally, the program was capped at five students for each of the three tracks, but last year the program had approximately 20 students and another eight or 10 in internships. This fall, another 18 enrolled.

“The level of academic excellence is rising along with the numbers and is now very substantial,” Beck said. “Plus we’re getting higher acceptance rates from applicants. A lot of them realize that if they develop higher skills, they have a better chance of being hired, and they know that they’ll get a lot of contact with companies through our program.”

Those contacts have panned out in a big way. Even with the recession, the program has had 100 percent placement with corporations, government and academia. And the interaction has become a two-way street by engaging corporate executives and bringing them to campus.

Learn more about Rice’s Professional Science Master’s Program

“A lot of corporate executives think that Rice is a neat environment,” Beck said. “They get the opportunity to attend events, and we’ve invited a lot of them to speak at our seminars. It really gets them involved and become champions for the university, not only for our program, but for Rice as a whole.”

More info at [www.profms.rice.edu](http://www.profms.rice.edu)