

# Science + Professional Skills

## A Look at the Professional Science Master's Degree

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**W**HAT DO YOU PLAN TO DO WITH YOUR DEGREE? Do you want to work in the industrial, academic, government, or non-profit sector? Will you pursue an advanced degree before, or perhaps while, doing so?

As you face these important career decisions, it's essential that you consider the type of science you want to do and the professional skills you will need to be successful in the workplace (see "Taking the Next Step").

Science students follow a variety of pathways on their way to employment. For some, the journey is short, consisting of a job search. For others, years are spent pursuing an advanced degree.

If you are thinking about graduate school, you need to choose a field and a degree that complement your professional aspirations. A wide range of programs exist. Students interested in research careers tend to pursue Ph.D.s, while those interested in business attend M.B.A. programs. But what do you do if you want a challenging professional career in science – yet don't want to earn a Ph.D. or M.B.A.?

### Consider a PSM

The Professional Science Master's (PSM) degree is a relatively new type of graduate degree. Core curricula cover a variety of interdisciplinary science and mathematics fields, as well as classes and training in the professional skills that employers say they desire in employees. The degree is designed to allow you to pursue advanced training in science without having to get a Ph.D., while simultaneously developing critical and relevant business skills. After only two years in a PSM program, you will be able to launch your career in science.

This powerful combination of science and professional skills is highly valued by employers, and helps PSM graduates find careers in business, government, and non-profit organizations. Graduates do well in the job market in their chosen fields and are prepared to progress rapidly toward leadership roles.

### Pursue science

The PSM is a rigorous science degree, preparing students for work in emerging and existing technical fields outside the university. Most PSM degrees provide interdisciplinary training, which graduates find is an advantage in the job market.

A chemistry background is excellent preparation for PSM programs such as chemical entrepreneurship, computational chemistry, materials and chemical synthesis, and forensic science. Many of the interdisciplinary PSM programs accept students who major in any natural science, including chemistry.

### Develop professional skills

The professional skills components of PSM programs, generally not part of a traditional research-oriented M.S. or Ph.D. program, are often called the "plus" courses. They may include business basics, project management, teamwork, non-technical communication, research/business ethics, and regulatory issues.

## Taking the Next Step

As you're planning the next phase in your scientific career, be sure to consider...

### ... the wide range of scientific options

By the time you graduate with a science degree, you will have been exposed to several different disciplines — and learned about at least one in depth. Determine which of these areas interest you most, how much more you would like to learn in an academic setting, and how you envision using your knowledge. Will you pursue fundamental research, develop new ways to apply it, or support scientific advancement in other ways?

### ...and the importance of professional skills

Organizational and communication skills are critical for any career. The abilities to work in teams, manage projects, and communicate with the public are also beneficial. Positions in industry require familiarity with business strategies and regulatory issues. Determine which career paths will best use your skills, and which areas you need to develop further. What formal or extracurricular opportunities will you have to practice and demonstrate your skills?

# = Formula for Success



## Connect with employers

PSM programs also have close relationships with businesses. PSM students network with potential employers through either an internship or a “real-world” capstone project, instead of preparing a research thesis. Also, each PSM program has an advisory board of employers who make sure that the program responds to changing job market demands and gives students the skills and knowledge needed to succeed in a science career.

For example, Case Western Reserve University, in Cleveland, encourages chemistry students to get a PSM through their Science and Technology Entrepreneurship Program (STEP), which offers a focus in chemistry for entrepreneurship. The program provides studies in technology innovation and state-of-the-art chemistry, practical business instruction, and real-world entrepreneurial experience. Marc Umeno, founder of NeoMed Technologies and a Case Western PSM graduate observes: “STEP gave me access to leading minds in both science and business through a mix of class work, projects directly related to my start-up company, and guest speakers with real-world experience. I also had access to world-class medical researchers at University Hospitals of Cleveland and the Cleveland Clinic.”

PSM graduates work in a wide range of organizations, from major pharmaceutical companies to the federal government and start-up biotechnology companies – to name just a few. Graduates of the University of Connecticut’s PSM programs in applied genomics and microbial systems analysis are employed at small, innovative companies (including Genaissance Pharmaceuticals, Neurogen Corporation, and Cereon) and at pharmaceutical research divisions (Amgen). Graduates of Penn State’s PSM program in biotechnology work for the U.S. Patent and Trademark Office, handling the intellectual property aspects of innovation, or at large pharmaceutical companies like GlaxoSmithKline.

Alan Willenbrock is a chemical engineer who works for Morgan Stanley, a company that employs PSM graduates. Willenbrock also serves on the PSM Advisory Board at the University of Arizona, and observes, “I have chosen to support the PSM program for several years for one very

## Quick facts about PSMs!

- ⊙ The PSM degree is an innovative graduate degree designed to prepare students for science careers in business, government, or non-profit organizations.
- ⊙ Because of their ongoing relationships with employers, PSM degree programs are unusually nimble in adjusting to changing workforce demands and technologies.
- ⊙ Since the first PSM program began in 1997, nearly 1,500 have graduated nationally. In academic year 2004-05 alone, there were more than 530 new graduates. Preliminary data from 2005-06 indicate rising numbers of both enrolled students and graduates.
- ⊙ Surveys of recent PSM graduates show that they are working primarily in business and industry, with median starting salaries of \$55,000 – \$62,000. PSM graduates employed in government and non-profit organizations report salaries between \$45,000 and \$55,000.
- ⊙ Funding for the creation and expansion of PSM degree programs is proposed in the U.S. Senate competitiveness legislation (S. 761, the “America COMPETES Act”).

Search for PSM programs and learn more about the PSM degree at [www.sciencemasters.com](http://www.sciencemasters.com).

simple reason: the program works. The PSM program produces students who are uniquely qualified to enter the workforce and make a real difference.”

## Invest in your future

Job market projections indicate that most new jobs will not be in the university classroom or laboratory. Instead, the majority of new jobs will be created in business and industry. While employers still want workers with advanced science education, they also want workers with more than just technical competency in science and mathematics. They want workers who can write, communicate, manage, and lead.

Be sure to position yourself for a successful career. Earning a PSM degree is an increasingly popular way to develop a strong science background enhanced by valuable professional development skills – and thus remain competitive in the job market far into the future. **IC**



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