Professional Science Master’s
Degree Programs: A Systems Approach

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Bringing Science & Business Together

SUNY Professional Science Master’s Programs

– Funding by the Alfred P. Sloan Foundation

What is a Professional Science Master’s Program?

Designed for a broad range of science and technology disciplines, the innovative Professional Science Master’s (PSM) program combines a science-based curriculum with management, marketing and other industry-relevant coursework, as part of the “PLUS” component. Currently, there are more than 100 US universities offering more than 200 PSM degrees.
The Professional Science Master’s Degree is a Hybrid Professional Degree

STEM
Science
Technology
Engineering
Math

PSM

“PLUS”
Business Skills
Communication Skills
Teamwork Management
Project Management
Presentation Skills
Regulatory Issues
Intellectual Property Law
Financial Management
Etc.
Number of PSM Programs in US Rising Strongly

- 291 active PSM programs
- 126 universities
- 5,000+ PSM graduates to date
- 5,500 students enrolled nationally
- 80%+ immediate job placement, 5% Ph.D. track
- 50%+ women representation
- 30% under represented minorities
Number of PSM Programs in US Rising Strongly

- ~20% international students
- 80% enrolled in public institutions
- 55% earning over $50,000
- 17.5% earning over $80,000
- Majority work in state where they earned PSM degree
- Top PSM fields: Biotech, math & stats, computational science, environmental science
PSM Programs in US Universities

**PSM Programs 1997-2012***

High Level Supporters

- Council of Graduate Schools, many graduate deans
- Keck Graduate Institute
- Corporate senior leaders
- Business Higher Education Forum
- Council on Competitiveness
- National Governors Association (NGA), individual Governors
- National Conference of State Legislatures (NCSL), key legislators
- Senior Members of Congress and staff
- Press/media (both general and specialized science)
- National Research Council (National Academies)
- National Science Foundation
- + Chancellors of major university systems, e.g. CSU, SUNY, etc.
- National Association of System Heads (NASH)
Value of the SUNY PSM Degree

- Helps reverse NYS “brain drain”
- Builds partnerships between SUNY and NYS business and industry
- Requires Business Advisory Committee for PSM programs
- PSM is a unique hybrid degree (science + business)
- “PLUS” courses are a unique component of business and communication
- Professional alternative to doctoral degree
- Requires internship or co-op experience for all PSM students
- PSM degrees encourage faculty and student collaboration with business professionals
- PSMs are one key to the 21st century innovation economy for NYS
Added Benefits of the SUNY PSM Degree

- Prepares skilled, cross-trained employees for technology oriented business
- Supports SUNY’s strategic plan
- Promotes university/business partnerships in 10 economic development regions of New York State
- Enhances economic and workforce development
- Encourages regional partnerships among campuses
- Stimulates technology transfer
SUNY PSM Initiative: Context

- The State University of New York consists of 64 campuses and 427,000 students. ~40,500 are graduate students. This represents enormous potential for PSM program development in STEM disciplines.

- SUNY also operates SLN, the SUNY Learning Network, an on-line course delivery system that has ~100,000 students enrolled. SLN is expected to become a significant delivery vehicle for PLUS courses and PSM degree programs.

- The SUNY PSM Program is directed by Dr. David King, Dean of Graduate Studies and Research at SUNY Oswego, under the auspices of the SUNY Provost’s Office.

- The SUNY PSM Program enjoys strong support among state and regional economic leadership.
The PSM Initiative: Purpose/Goals

- Strengthens master’s level education across SUNY
- Helps to address the national shortage of domestic students in graduate programs in STEM fields
- Creates another distinctive professional emphasis for master’s degree programs
- Refocuses the mission of the master’s degrees in STEM fields
- Develops new professional career options for students who do not wish to pursue a research doctorate
History of the PSM Program

In 2007, the Alfred P. Sloan Foundation awarded SUNY a large grant to develop and establish PSM degree programs on nine different SUNY campuses. The original goals of the program were to reverse the “brain-drain” of STEM talent in New York State, strengthen master’s level education in New York; help to solve the national shortage of domestic students in the sciences and mathematics, create additional major focus in graduate education that would articulate a distinctive professional emphasis for more master’s degree programs; and, revitalize the career potential for students who do not wish to pursue a doctorate.

Resources

www.suny.edu/psm
www.professionalsciencemasters.com
www.nyscim.org
www.apsanet.org

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What is a Professional Science Master’s Program?

Designed for a broad range of student and technology disciplines, the innovative Professional Science Master’s (PSM) program combines a science-based curriculum with management, marketing and other industry-relevant coursework, as part of the “TUGS” component. Currently, there are more than 150 US universities offering more than 200 PSM degrees.

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www.suny.edu/psm

Prospective Students
Job Opportunities
Industry Partners

Research
News & Events
Contact

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SUNY PSM Consortium Campuses

University at Albany
Forensic Biology – enrolling students
Biodiversity, Conservation & Policy – enrolling students
Computer Science – enrolling students

Binghamton University
Geographic Information Systems – enrolling students
Material Science & Engineering – enrolling students
Biomedical Anthropology – enrolling students
Integrated Watershed Studies – in development

The College at Brockport
Biology – enrolling students

University at Buffalo
Biophysics – enrolling students
Natural & Biomedical Sciences – enrolling students
Computational Chemistry – enrolling students
Molecular Chemical Biology – enrolling students
Environmental Geographic Information Systems – enrolling students

Buffalo State College
Professional Applied and Computational Mathematics – enrolling students
Great Lakes Ecosystems Science – in development

Cornell University Graduate School
Applied Statistics – enrolling students
Food Science and Technology – in development

SUNY Cortland
Sustainable Energy Systems – in development
Biomedical Sciences – in development
Advanced Materials – in development
Environmental Biology – in development

Empire State College
“Plus” Certificate in Technology Transfer – in development
*“Plus” coursework online including Certificates in Project Management and Healthcare Management
SUNY PSM Consortium Campuses

**SUNY College of Environmental Science & Forestry**
Sustainable Engineering Management – in development
Bioprocess Engineering (track) – enrolling students
Paper Engineering (track) – enrolling students

**SUNY Fredonia**
Green Business – in development

**SUNY Institute of Technology**
Applied Mathematics – in development
Health Information Systems – in development

**SUNY New Paltz**
Computer Science/Data Analytics – in development

**SUNY Old Westbury**
*Program(s) to be identified*

**SUNY Oneonta**
Lake Management – in development

**SUNY Oswego**
Professional Chemistry – enrolling students
Human Computer Interaction – enrolling students
Health Information Systems – in development
Technology Management – in development

**SUNY Plattsburgh**
Environmental Policy – enrolling students

**SUNY Potsdam**
*Program(s) to be identified*

**Stony Brook University**
Instrumentation – enrolling students
Chemistry – in development
PSM Program Development – Best Practices

- Do a market study regarding workforce needs and encourage faculty to “listen” to business partners.

- Organize a Business Advisory Board to collaborate with your PSM program faculty in designing the PSM curriculum, particularly the “PLUS” component.

- Focus on adapting existing STEM degree programs for the development of PSM tracks.

- Encourage campuses to build official PSM affiliation (through KGI-PSM office) into program design.

- Establish a timeline for PSM development and create metrics to benchmark progress.
PSM Program Development – Best Practices (cont.)

- Build a “sustainable” infrastructure to maintain PSM programs for the long term.
- Identify a “point person” or coordinator to develop and lead each PSM program.
- Emphasize the PSM brand by highlighting placements of graduates, employment opportunities, and success stories.
- Seek external funding to promote PSM development, scholarships, etc.
- Develop an assessment regime to monitor program outcomes.
- Solicit internship placements from employers.
- Facilitate job placement and track the progress of PSM graduates.
System-Wide PSM – Best Practices

**Vertical Integration**: System-wide PSM program infrastructure must be built from the top down and the bottom up.

**Communication**: Develop clear lines of communication by establishing a regular newsletter, PSM specific website, system-wide brochure, and a listserv to promote discussion.

**Infrastructure**: Lessen bureaucratic tensions and “turf issues” by naming a system-wide PSM director, naming point people on each campus, establishing a system-wide advisory board and encouraging campuses to develop program-level advisory boards.

**Scaling Up**: Avoid complex bureaucratic structures by establishing a decentralized administrative model that encourages “scale up.” Some processes, such as branding, degree registration, and coordination may require a centralized administrative structure.

**Buy-In**: Ensure success by soliciting faculty “buy in” early, identifying business collaborators and engaging business/industry leaders.
Impediments to System-Wide Collaboration

**Bureaucracy:** Complex bureaucratic structures and poor communication lines may result in loss of stakeholder support.

**Resources:** The scarcity of institutional resources and competition among various initiatives can place the PSM on the “backburner”.

**Expediting:** Even small delays at the system-level can result in severe delays at the campus level.

**Pushback:** Potential for “pushback” from traditional science and MBA faculty.
PSM Internships Are Vital to Sustaining PSM Programs

- Internships provide benefits to each of the parties involved.

- First, **COMPANIES** get to “test drive” some of the highest caliber students available for possible future employment.

- Second, **STUDENTS** get to receive real world, hands-on experience in a career field related to their specific program.

- Third, the **UNIVERSITY** has a great opportunity to highlight the best and brightest of their students and create collaboration opportunities.

- Fourth, the **REGION** receives educational programs that stimulate economic and workforce development
The Role of Business Advisory Boards

**Changing Role**: The role of business advisory boards changes as the program moves from the planning phase, to the implementation phase, to the operational and assessment phase.

**Collaboration on Curriculum**: In the planning phase business advisory boards should map out the skills they are looking for and assist in identifying courses that might teach these skills.

**PSM Registration**: In order for a PSM program to be recognized, it must have a Business Advisory Board.

**Enhancing Goals**: After the program has enrolled students, the role of the business advisory board is to fine-tune the program so that it produces the desired results in its graduates.

**Internships & Employment**: Ultimately, the Boards can assist in finding internship placements and identifying employment opportunities.
Benefitting Employers

**Talent Search**: Internships have long been seen as a trial period for companies to recruit talent before they enter the job market.

**Flexibility**: Internships in PSM programs are helpful in that they can serve multiple functions from either the STEM or business side of the company.

**Recruiting**: Internships are a more cost-effective way for companies to staff their departments/projects than hiring full-time employees, especially if those full-time employees don’t have the skills possessed by a PSM student.

**Teamwork**: PSM internships are typically project-oriented and often require collaboration with a team.
Benefitting Students

**Reality Check**: Students are given an opportunity to explore the field for which they are preparing. This gives the student a reality check about their chosen career path.

**Theory → Practice**: Students are able to put what they’ve learned into action. Since the PSM is a hybrid degree, providing a broad range of skill sets, the student can experience the full potential of their degree.

**Compensation**: A paid internship will also benefit the student by helping to defray the costs of continuing their education. Not all PSM internships are paid.

**Academic Credit**: Whether paid or unpaid, most internships can be configured for students to earn academic credit.
Benefitting PSM Institutions and Programs

**PSM Branding**: Some employers aren’t aware of PSM degrees. PSM programs help academic institutions build a reputation in the business community.

**Partnerships**: Internships, co-ops, or other collaborative opportunities exist in partnerships between business and educational institutions that can contribute to long-term successes for both partners.

**PSM Curriculum**: PSM programs can also recruit individuals from regional companies to serve on PSM advisory boards to help ensure that the skills needed in their field are being provided by the PSM curriculum.
Benefitting Regions

**Educated Workforce:** PSM internships and degree programs provide the region as a whole with a more educated, engaged, and prepared labor force.

**Community Building:** By increasing cooperation between businesses and higher education, internships help to build partnerships in the region, that promote economic development.

**Increased Retention:** Internships increase the likelihood of interns staying in the state/region after graduation.

**Attract New Business:** Successful internship programs attract new businesses to the area where they can draw from highly skilled talent.

**Engaged Citizens:** Studies show that students engaged in internships early and often will develop a greater sense of community engagement.
Conclusion – Power of SUNY

- SUNY’s half million students come largely from New York State
- SUNY graduates generally seek careers in NYS
- The PSM degree builds bridges between SUNY institutions and NYS business and industry
- The SUNY PSM initiative is a valuable resource for promoting higher education & business collaboration for economic and workforce development
- SUNY PSM degrees help to “connect the dots” for enhancing the innovation economy across NYS
Main PSM Site
http://www.sciencemasters.com

National PSM Association
http://www.npsma.org/

SUNY PSM
http://www.psm.suny.edu

Council of Graduate Schools
http://cgsnet.org

Keck Graduate Institute
http://www.kgi.edu
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