Lessons Learned from the Professional Science Master’s Initiative

“the gold standard and shining model for professional skills and development in graduate education”

Daniel D. Denecke, Vice President, Best Practices and Strategic Initiatives, Council of Graduate Schools, NPSMA 6th National Conference, November 12, 2015

Linda D. Strausbaugh
Professor Emerita, Genetics and Genomics, UCONN
Director of Strategic Initiatives, NPSMA
Chair, NPSMA Workforce Advisory Council
The PSM Concept: the best graduate programs for STEM workforce development are designed collaboratively between educator and employer communities.

Professional Science Master’s degrees feature:

- A majority of graduate-level STEM courses, often including research experience.
- A professional skills component.
- Experiential learning (typically an internship or capstone project).

Known as “PLUS” courses and components, the latter two are developed in concert with employers.

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Different points of emphasis......

PLUS Workforce Readiness Training

► Concise Business Resume
► Working as part of a team of diverse members
► Comfort with changing and short-term projects and goals
► Speaking/writing for a heterogeneous team that will include non-scientists
► Internships, capstone projects, thesis or other experiential learning with direct employer involvement

Traditional Science Training

► Academic Curriculum vitae
► More of a “self-contained” or homogeneous team experience
► Long-term commitment to area of investigation
► Presentations/abstracts/papers/grant applications for specialized audiences that share expertise
► Thesis with supervision by academic faculty

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REGULAR STUDENT AND PROGRAM CONTACT WITH EMPLOYERS, INCLUDING MANDATORY ADVISORY BOARD

EXAMPLES OF DESIRABLE PLUS CONTENT IDENTIFIED BY EMPLOYERS

Communication Skills
Team/Laboratory/Project Management
Economics/Finance/Accounting
Regulatory Issues/Ethics/Responsible Conduct
Marketing/Web design/Graphics
Statistics/Data Analytics
Information Technology/Systems/Cyber Security
Global Understanding and Collaboration
Entrepreneurship/Innovation/Technology Transfer/Intellectual Property
Health Care Administration/Clinical Trials
Strategic/Critical Thinking & Decision Making

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What do employers mean by “communication skills”?

- Think, communicate, and act across boundaries: level of technical expertise, job functions, disciplines, cultures.
- Communicate verbally with people inside (co-workers, management) and outside (investors, customers, clients, media) of the employer organization.
- Ability to pull together and effectively make an oral presentation.
- Ability to create and/or edit written reports.
- Ability to organize and communicate thoughts, and influence others.
- Willingness to actively share knowledge and coach co-workers.
PSM DEGREE PROGRAMS SPAN DIVERSE FIELDS OF STUDY IN STEM

- Agricultural Science/Food Science/Nutrition
- Biotechnology/Biomedical/Pharmaceutical
- Environmental Science/Ocean Science/Sustainability/GIS
- Computer Science/Analytics/ Big Data /Statistics
- Physical/Chemical Sciences

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Caveat: Skills are industry-specific

Bloomberg Interactive by Industry

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<th>Skill set</th>
<th>Chemical</th>
<th>Energy</th>
<th>Financials</th>
<th>Healthcare</th>
<th>Pharma</th>
<th>Technology</th>
<th>Manufacturing</th>
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<td><strong>Leadership Skills</strong></td>
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<td><strong>Creative Problem Solving</strong></td>
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SURVEY OF PLUS COURSES IN PSM PROGRAMS NATIONWIDE

HEIDI HARKINS
UNIVERSITY OF NORTH CAROLINA

Delivery Mode

50% 33% 17%
SCHEDULING MODES

• Semester long
• Half Semester
• Executive Format (days-weeks)
• Academic Year
• Summer
• Wintersessions

• Meets once per week
• Meets multiple times per week
• Offered in the evening
• Offered in the day
Who is teaching?

- Exclusively non tenure track faculty (e.g. adjunct faculty, lecturers, instructors)
- Jointly taught by faculty and individuals outside the institution
- Exclusively tenure track faculty
- Exclusively individuals with no institution appointment (e.g. industry representatives)
- Other

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THANK YOU FOR YOUR ATTENTION

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