Growing the Professional Science Master’s (PSM) in Physics

Alaina G. Levine, The University of Arizona
Sheila Tobias, Consultant to the Sloan Foundation’s Science Master’s Initiative

PSMs:
• Typically 2 years of graduate-level education in a scientific discipline
• Additional training in business management, communications, and other professional skills
• Internship in lieu of a thesis

PSMs by the Numbers
• 1300 students (07-08)
• 100+ programs
• 60+ universities
• 12 physics PSMs
• 1000+ alumni worldwide

Industry perspectives:
• Many companies need PhD’s but not in large numbers
• They do want people with advanced science training
• PLUS:
  • Interdisciplinary teamwork
  • Project management
  • Communication skills
  • Basic business knowledge

Benefits to Physics Depts
• Strengthened industry ties
• Increased grad student diversity
• Increased fundraising opps
• Strengthened ties with other university units (i.e. biz and law colleges, other science depts)
• Increased curriculum opps for PhDs
• Increased PR opps

PSM Subjects:
• Chemistry
• Geology
• Bioinformatics
• Forensics
• Physics
• Medical Related
• Computer Information
• Biology/Biotechnology
• Environmental Sciences
• Mathematics & Statistics

Physics PSMs
Appalachian State University
  Engineering Physics: Instrumentation and Automation
Case Western Reserve University
  Physics for Entrepreneurship
Illinois Institute of Technology
  Health Physics
New York University
  Physics
Oregon State University
  Applied Physics
Rice University
  Nanoscale Physics
The University of Arizona
  Applied and Industrial Physics/Medical Physics
University of Houston—Clear Lake
  Physics, Technical Management Sub-plan
University of Northern Iowa
  Applied Physics
University of South Carolina
  Modeling for Corporate Applications
University of Utah
  Science Instrumentation
Western Carolina University
  Science Entrepreneurship

PSM by the Numbers

Student perspectives:
• Broadening career options—outside academia
• Terminal M.S. (not just stepping stone to Ph.D.)
• Interdisciplinary training opportunities
• Graduate-level re-entry of students currently working and/or raising families
• Hands-on learning opportunities with job applications (e.g., case study projects, internships) involving potential employers

Resources
Sloan Foundation
Council of Graduate Schools
www.sciencemasters.com
National PSM Association (NPSMA.org)
alaina@u.arizona.edu
sheilat@sheilatobias.com

“Raytheon Missile Systems has a need for physicists with graduate level skills (mechanics, E&M, optics, solid state, etc.) and training in developing state-of-the-art products in an integrated product team environment. The Professional MS degree at the University of Arizona provides such a program and it can be instrumental in making that employee successful at Raytheon.”

---Eric J. Borg, Manager, Raytheon Missile Systems

Special Thanks to Ursula Bechert, Oregon State University