



The Voice of the PSM

Summer/Fall 2013

Volume 6, Issue 2

You are invited

**November 14-15, 2013
NPSMA 4th National Conference**

“High Impact Partnerships: Building on 15 Years of Innovative Professional Science Master’s Education”



**Crowne Plaza National Airport Hotel
1480 Crystal Drive
Arlington, Virginia**

View program and register at <http://www.npsma.org/upcoming-national-conferences>. Discount registration until September 1. Deadline to register: October 18.

Professional Science Master’s (PSM) Milestone Event to be Held on November 12, 2013

The progress and promise of the PSM degree will be the focus of a Capitol Hill briefing to be held on Tuesday, November 12, 2013 in Washington, D.C. This event will celebrate the 300 plus PSM degree programs and their role in preparing the next generation of STEM professionals. The PSM initiative began 15 years ago and continues to promote partnerships with business and government to prepare the highly skilled talent the nation needs to be successful going forward.

Increasing the number of US citizens who pursue education and subsequent careers in STEM fields is a national priority focused on enhancing US competitiveness. The November briefing will include policy makers, academic leaders, business leaders and PSM graduates. Each of these stakeholder groups will provide a perspective on the PSM and its centrality to workforce development and economic development. The Advisory Group to the PSM National Office at the Keck Graduate Institute of Applied Life Sciences in collaboration with the National Professional Science Master’s Association (NPSMA) are providing leadership in organizing the November Milestone event. Registration for the event is by invitation only.

Please join us

**November 13, 2013
NPSMA Pre-conference Workshop**

“PSM Opportunities in Cyber Security”

**Crowne Plaza National Airport Hotel
1480 Crystal Drive
Arlington, Virginia**

View program and register at <http://www.npsma.org/upcoming-national-conferences>. Discount registration until September 1. Deadline to register: October 18.

Take Advantage of the KGI Rebate Program for NPSMA Memberships

The Alfred P. Sloan Foundation awarded the PSM Office at the Keck Graduate Institute funding for a rebate program that provides membership dues rebates for **new** institutional members of the National Professional Science Master’s Association. This rebate program is not dependent upon your application for PSM affiliation with the PSM office at KGI.

If your university would like to take advantage of the rebate program between now and **October 31, 2013**, you will be reimbursed 75% of the NPSMA membership fee. The rebate program works as follows:

- University joins the NPSMA for one year (\$2,000).
- University completes rebate form and W9 to send to KGI along with NPSMA membership receipt.
- KGI reimburses the university 75% of membership fee.

Download the rebate form and W9 [here](#). Join the NPSMA [here](#) or print the form on the last page of this newsletter.

For additional information, contact Debra Warren-Hite at admin@npsma.org.

Inside this Issue

Data Sciences Workshop, CSUSM Student Finalist	2
Rice University’s Space Studies Track	3
News from the SUNY PSM Consortium	4
News from MSU PSM in Industrial Mathematics	5
Webinar Announcement, New Grant	6
NPSMA Membership Form	7

**NPSMA Regional Workshop Summary
“Opportunities in Data Sciences”
Worcester, Massachusetts**



The NPSMA Workshop “Opportunities in Data Sciences” was hosted by Worcester Polytechnic Institute (WPI) on May 28-29, 2013. A total of 83 participants were in attendance at the event which brought together people from industry and

government, as well as faculty members and graduates from existing PSM programs and soon-to-start PSM programs. Eighty-five percent of participants were from 27 colleges and universities. The attendees were welcomed with warm greetings by the host, Karen Kashmanian Oates, Dean of Arts and Sciences at WPI, followed by plenary and keynote speakers.



The presentations given by the industrial representatives covered various topics in this two-day event with discussions for workforce needs for professionals trained in data science and training professionals in data sciences: necessary skills and possible pathways which really interested PSM program directors and graduates. The presentation by Lilian Wu, Program Executive, Global University Programs, IBM Technology Strategy and Innovation, which was the highlight in this data science event, reported that the U.S. Department of Labor forecasts that the number of analytics-based jobs will grow by more than 20% between now and



2018, 40% of organizations report a skills shortage in the ability to manage information and the U.S. faces a shortage of 140,000 to 190,000 people with analytical expertise. The need for data analyst in the U.S. government was also discussed.

The three panels were widely arranged to cover topics such as *Best Practices for PSM Programs*, *Development of Data PSM Programs Dos and Don'ts*, and *PSM Industrial Projects with Applications of Data Mining* which not only answered questions about challenges and opportunities in developing new programs but also described the internship and project opportunities for students in the data science field. Some faculty speakers



shared their experience about analytics education. The detailed agenda and the presentations from the workshop are posted on the NPSMA's website.

NPSMA would like to thank the program committee members, Bogdan Vernescu (WPI), Joaquin Carbonara (SUNY Buffalo State), Elke Rundensteiner (WPI), and Michael Rappa (NCSU) for their contribution, with special thanks to



Debbie Warren-Hite, NPSMA Coordinator, for making the arrangements and contributing to the success of this workshop.

**CSUSM Student Named Finalist for
Presidential Management Fellowship Program**



Student Doug Gora is part of the 2nd Cohort in the Professional Science Master's (PSM) in Biotechnology Program at California State University, San Marcos (CSUSM).

Doug has been selected as a finalist for the highly coveted Presidential Management Fellowship (PMF) Program. It is a program started in 1977 that matches outstanding graduate students with Federal grant opportunities. The PMF Program allows participants to work in a leadership role and perform valuable service while jump-starting a career.

He served in the U.S. Army and said, “I started as a buck private, serving in Germany in 1988. I finished my service as a Chief Warrant officer, serving as a second engineer and then the maintenance officer for a transportation company in San Diego in 2004.”

Doug then joined the PSM in Biotechnology Program and he said, “The best part about the program for me was the mix of the MBA course material as well as the hard sciences. I can't tell you how much more confident, and knowledgeable I feel after having completed all of the course work. The next best thing that was included in the PSM course was the in-depth information on FDA regulations and the types of oversight mandated by our government.”

NPSMA Institution Member News

This newsletter serves as a venue for NPSMA institution members to make program announcements and attract national visibility. To receive full benefits and best practices advice for new programs, we encourage all non-member institutions to join the NPSMA.

Rice University’s Professional Science Master’s Program Enrolled its First Students in the Space Studies Track

By Dagmar Beck, Director, Professional Science and Engineering Master’s Programs, Rice University

This new degree track is focused on training students in Space Science and Engineering with the intent of creating new options for engineering and science students interested in working in the space technology industry or related government entities, e.g., NASA, as well as governmental relations positions in non-profit organizations, industries, and academic institutions. The track is supported by a strong board of affiliates from space related industry and organizations in addition to the Rice Space Institute.



Students will be able to participate in a space seminar, the Space Frontiers Lectures series, which is designed to introduce students and the general public to the wide array of issues involved in the pursuit of an advanced presence in space which include: international policy, technology innovation, commercialization, biological impacts and space science. Among the many recent speakers were Bobak Ferdowski and Ravi Prakash, aerospace engineers from NASA’s Jet Propulsion Laboratory, Gene Kranz, retired NASA Flight Director, and Alan Bean, NASA astronaut and artist.

Dagmar Beck, Director of the Professional Science Master’s program in the Wiess School of Natural Sciences, is now also responsible for amplifying the engineering master’s students’ experiences at Rice as the Director for Professional Master’s in Science and Engineering.

Each of the Engineering School’s eight departments offers a professional master’s degree, most consisting of 30-36 credit hours. The non-thesis graduate degree option is aimed at students interested in augmenting their skill set to pursue roles in engineering leadership in industry and business. In her work with the departments, Beck has made several changes designed to enhance Rice’s professional master’s degree in engineering. In collaboration with a new liaison coordinator, Agustina Fernandez-Moya, Beck made great strides during spring 2013 work with the engineering departments to learn more about the curriculum and

goals of each professional master’s degree. The departments have added business and management electives to their course requirements, started marketing of the programs, and held successful social events and a seminar series in the spring which will continue in fall. New events to bring all professional master’s students in science and engineering together with MBA students are planned for the coming semester.

The School of Engineering aims to improve the experience of students enrolled in the professional master’s track by providing enhanced services for these students, building a community within the School of Engineering, as well as seeking new avenues for publicizing the program to attract more highly qualified students to its applicant pool.

“Our professional master’s students spend a shorter time here on campus, and they have a different way of experiencing Rice,” says Associate Dean of Engineering Bart Sinclair. “Dagmar has worked to build the Professional Science Master’s program for the School of Natural Sciences and we can benefit from the experience she’s developed overseeing that degree track.”

Beck in collaboration with a new liaison coordinator, Agustina Fernandez-Moya, have made great strides in spring to meet with the engineering departments to learn more about the curriculum and goals of each professional master’s degree. Departments have added business and management electives to their course requirements, marketing of the programs has started, social events and a seminar series were of success in spring and will continue in fall. New events to bring all professional master’s students in science and engineering together with MBA students are planned for the coming semester.



“Giving our professional master’s students a ‘place’ that they can call their own has been a great success for us in Natural Sciences,” says Beck. “It provides them with their own community on Rice campus, where they can connect and network with each other.” Both Beck and Sinclair stress that offering these students a positive experience as they work toward their degree is an important component to the program’s continued success. They are also looking at ways to better target prospective students for the program, and ensure that students find a degree plan that works best for them. “We want to provide more support for our programs in order to enhance the quality of the programs and the value they deliver to our students. Working jointly with the School of Natural Sciences will help us achieve these goals.”

News from the SUNY PSM Consortium

By David King, Director of SUNY PSM Consortium, Dean of Graduate Studies, Professor of History, State University of New York, Oswego; NPSMA President

The State University of New York (SUNY) PSM Consortium of 19 campuses met for their biannual meeting on April 29, 2013 at SUNY System Headquarters in Albany, New York. Dr. David King, SUNY PSM Director, convened the representatives from each of the participating campuses, as well as numerous leaders who have been actively involved in the success of the SUNY PSM initiative. Among those participating in the meeting were SUNY Provost David Lavallee, Sloan Foundation PSM Senior Advisor

Michael Teitelbaum, national PSM founder Sheila Tobias, Welch Allyn representative Winsome Graham, CUNY PSM representative Eric Vieira, and other SUNY System administrators.

A highlight of the event was SUNY Provost David Lavallee's visit in which he offered enthusiastic support for SUNY PSM initiatives. Provost Lavallee continues to be a strong advocate for the expansion and collaboration of PSM programs across SUNY and beyond. A Certificate of Appreciation was presented to Dr. Lavallee for his enthusiastic and constant support of the PSM initiative.

As the national PSM program total nears 300, the NPSMA and the national PSM office at Keck Graduate Institute (KGI) will host a 300th Milestone event on the Hill in Washington in November. Numerous high-profile higher education, industry and government officials are expected to participate.

In addition, Eric Vieira presented CUNY's interest in collaborative PSM program development and the possibility of internship exchanges.

Currently, SUNY PSM programs are in nine out of ten NYS Economic Development Regions with CUNY being the dominant PSM leader in the tenth region - New York City. Vieira mentioned the need to create innovative programs that respond to the immediate needs of regional and national employers. NPSMA Finance Officer Joaquin Carbonara stated that in order to do this, campuses must train faculty in adapting their expertise to these various needs. He noted that this can be more easily done by hiring adjunct professors with industry experience.

Regarding internships and co-ops, Winsome Graham, on behalf of the Welch Allyn Corporation, expressed her gratitude for the many positive experiences with SUNY Oswego PSM program students. Welch Allyn, a company specialized in manufacturing medical instruments, offers PSM students the opportunity to gain unparalleled real-world experiences, which is enhanced by their ability to build relationships via mentorships and collaborative projects. Students are also given constant feedback from their direct supervisors about their strengths and weaknesses. After completing the internship or co-op, the student becomes a Campus Ambassador for Welch Allyn, providing knowledge and feedback to interested students and faculty.

National PSM founder Sheila Tobias presented the research she conducted with her colleague, Susan Richards, on tracking PSM graduates via social media sites such as Facebook and LinkedIn. In their research, Tobias and Richards looked at data including job titles, employers, and other employment related information. They found valuable information about how graduates are using their degrees and about the industries that hire them. Next, Sloan Foundation PSM Senior Advisor Michael Teitelbaum updated the Consortium concerning the national perspective on the growth of PSM programs and the expansion of the PSM initiative to even more campuses. He noted that PSM programs are a great solution for graduates seeking a STEM degree that takes less time than a PhD, but still provides multiple skill sets sought by many employers.

Also discussed was the new affiliation process administered by the national PSM office at the Keck Graduate Institute (KGI) and Sloan Funding to reimburse campuses and systems that join NPSMA. The meeting offered the members of the Consortium an excellent opportunity to discuss best practice methods and to exchange resources on the development of new or existing programs. Further, there was an emphasis during the meeting on expanding the number of online PSM course offerings to provide students both in and outside of the SUNY system a wider range of options, particularly focused on specialized online PLUS course offerings. The Consortium participants also discussed the continued improvement of the SUNY PSM website (www.psm.suny.edu), including site structure, content, usability, and other features. Other discussion topics included marketing, recruiting strategies, branding, internships, business advisory councils, assessment procedures, and the collection of enrollment and job placement data.



Left to right: David Lavallee, SUNY Provost; and David King, SUNY PSM Director.



Left to right: Sheila Tobias, national PSM founder; David Lavallee, SUNY Provost; David King, SUNY PSM Director; and Michael Teitelbaum, Sloan Foundation PSM Senior Advisor.

News from the MSU PSM in Industrial Mathematics Program

By Peiru Wu, Director of PSM in Industrial Mathematics Program, Michigan State University; NPSMA Board Member

As an essential pillar of the Professional Science Master's (PSM) in Industrial Mathematics Program at Michigan State University, it requires students to work on real-world problems solicited from local industries or governments every spring. We have a history of nearly 80 successfully completed projects proposed by local companies in Michigan since 2000. In spring 2013, we have delivered five industrial projects at the company sites, Chrysler, Consumers Energy, QED, Spectrum Health, and Steelcase respectively. Typically, teams of three graduate students where one was from Statistics or PhD program in Mathematics, assisted by one or two undergraduates, worked on the problems proposed by the five companies during the spring semester. The companies were very satisfied with the students' project results and deliveries in the end and we consider continuing to work with some of these companies on the next phase of the projects in spring 2014.



In April 2013, as one of the program's traditions for almost a decade, the teams gave the presentations in our department on the 10th MSU Student Mathematics Conference [See photo to left] for the following projects:

Modeling Contact Stress for Automotive Design: The aim of the project is to introduce and develop two physical models in calculating the stress between two dissimilarly shaped surfaces.

Minimizing the Bad Debt Loss Ratio Using the CHAID Technique: The company incurs a significant amount of bad debt expense every year. Using Chi-Squared Automatic Interaction Detection (CHAID), this project will create a decision tree organizing the factors that have the largest impact on the likelihood of recovering this debt.

Optimization of Methane Gas at Landfills: The purpose of this project is to develop an algorithm using historical data provided by the company in order to maximize the amount of methane gas captured at a landfill, while maintaining safety at the landfill.

Short-Term Forecast Analysis to Patient Admission: The goal of this project is to develop a model that predicts the short-term market share on a monthly basis for several health care centers for the health system.

Inventory Analysis for a Production Line: The purpose of this project is to develop insight on frequency and determining factors of inventory shortages for a production line.

The industrial project teams under the core course called Projects in industrial Mathematics (MTH 844) provide a platform for students working on real-world problems and gaining industrial experience in project collaboration with local companies every spring. As a matter of fact, another core course called Survey of Industrial Mathematics (MTH 843) every fall is one of the keys to success of the MTH 844 projects. MTH 843 has three objectives: to develop team problem solving skills, develop report writing and presentation skills, as well as to survey mathematical methods most often encountered in industrial problem solving. Each student is required to do three term project reports under MTH 843 which effectively trains students on technical writing and problem solving before they take MTH 844 working on real-world problems.

In February 2013, several industrial mathematics students attended the 15th Annual Michigan Undergraduate Mathematics Conference to present their MTH 843 projects with various applications in real-world or their summer internship projects [See photo to right]. This is the first time experience for our program to present MTH 843 projects in a regional conference but very worthwhile. According to the students, the feedback and outcome were very positive overall and the goal of demonstrating and advertising the program was extremely successful.



**Webinar Announcement
Wednesday, October 9, 2013
3:00- 4:00 p.m. (Eastern Time)**

The Council of Undergraduate Research (CUR) and the National Professional Science Master's Association (NPSMA) will offer a webinar titled "Undergraduate Research as a Pipeline to Professional Science Master's (PSM) Programs: Applying Undergraduate Researchers' Skills to Degrees that Connect Academia to Industry."

This webinar is part of an ongoing series of broadcastings from CUR, and will feature Elizabeth Ambos, CUR Executive Officer, Joaquin Carbonara, NPSMA Financial Officer, Marilyn Wells, NPSMA Board Member, and other national figures involved in undergraduate research.

Undergraduate research (UGR) provides students the opportunity to develop skills that complement what they learn in the classroom. Skills in independent/critical thinking, oral and written communications and team work are all documented as benefits of UGR. On the other hand, the master's level PSM programs enroll highly motivated students with a bachelors degree, and provides them rigorous training in a focused area along with entrepreneurial business skills. A recent Association of American Colleges and Universities (AACU) study of employer attitudes reveal that employees' ability to innovate is highly prized. UGR and PSM programs are definitely connected to innovation! Entrepreneurship is an area of great potential, and the combination of UGR and PSM leads to it.

This seminar will give an overview of the activities that CUR and NPSMA support and promote (UGR and PSM programs respectively), how UGR can provide students the background to succeed in a PSM program and how UGR an PSM programs are well aligned with the needs in industry.

For further information please email admin@npsma.org.

Sheila Tobias and Susan Richards Receive New Grant

The Alfred P. Sloan Foundation, which has supported the PSM initiative since 1997, has approved funding of a cutting-edge analysis of the employment history of PSM graduates. Based on data obtained from a tracking project commissioned by NPSMA, the analysis will be performed by Sheila Tobias and Susan Richards and assisted by data analytics expert Michael Thompson. The team will target 3,000 PSM graduates and their 900 employers to learn:

- at what level/position graduates are entering their employers' organizations
- their assignments
- what positions they are likely to be promoted to
- whether their employers are sufficiently familiar with the PSM to understand and appreciate their unique skill sets

The goal of the year-long project is to help PSM directors and their stakeholders measure trends and take action that enables PSM graduates to establish a *firmer foothold* in the technical workforce and to foster employers' greater understanding and appreciation of their employees' unique skill sets. Another focus of the project will be the public (government) sector where sourcing technical talent is becoming a priority.

Results will be disseminated via the NPSMA website and workshops. For more information, email admin@npsma.org.

2013 NPSMA Awards

Each year at its National Conference held in November, NPSMA presents awards to outstanding members of the PSM community. Recognition will be given to those individuals who have made a difference. Please take a moment to consider your colleagues who have made outstanding contributions to the PSM program or to the NPSMA. Nominations for awards are accepted throughout the year.

Nominations must be received by October 15 to be considered for the November 2013 National Conference Awards Ceremony. Nominations received after this deadline will be considered for the following year.

For additional information and to see last year's recipients go to <http://www.npsma.org/>

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Newsletter

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Send newsletter submissions to admin@npsma.org.



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(The NPSMA is a 501(c)(3) Nonprofit Organization; Tax ID # 20-8766099)

Please Check Appropriate Membership:

New Renewal

<input type="checkbox"/>	Academic Institution (1 contact per PSM program)	\$2,000
<input type="checkbox"/>	Academic System (min. 5 campuses/universities)	\$1,500/campus
<input type="checkbox"/>	Individual	\$ 75
<input type="checkbox"/>	PSM Alum (if your institution is a member – 1 year FREE)	\$ 75
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