



Physical Science and Mathematics Scholarship

Chuhée Kwon¹, Paul Buonora², Jen-Mei Chang³, and Lora Stevens⁴

¹Physics & Astronomy, ²Chemistry & Biochemistry, ³Mathematics & Statistics, and ⁴Geological Sciences



ABSTRACT. The Physical Science and Mathematics Scholarship (PSM-Scholarship) program at California State University, Long Beach is sponsored by the National Science Foundation (DUE # 0966039) providing need-based scholarships to declared BS-track undergraduate students from the departments of Physics & Astronomy, Chemistry & Biochemistry, Mathematics and Statistics, and Geological Sciences. The purpose of the PSM-Scholarship program is to improve the retention and graduation rates and to prepare students to enter STEM (science, technology, engineering, and mathematics) workforce or graduate study. Our goal is to develop a cohort that will be a part of the college-wide learning community and foster student leaders in the respective department. The program organizes annual dinner with family, monthly meetings with faculty member, weekly study hours, and tutoring/volunteer opportunities for students to engage in the campus activities.

Needs

- ✓ In Fall 2011, we conducted an informal, anonymous survey of students in the four PSMS disciplines. From a total of 166 students who responded, over 55% of students indicated that the **financial issues** pose a significant barrier to the completion of the major.
- ✓ Students working more than 26 hours off-campus have lower overall GPAs (~2.5) than students who do not work off-campus (> 3.0).
- ✓ **Research experiences (77%)** and **mentoring from a faculty member (67%)** are two top factors that students felt would be helpful for them to be successful in the major.

Program Facts

- AY 11-12 is the second year of the 5 year funding from NSF.
- The average scholarship amount for a student is **\$6,400 per year** and it is determined by the financial need of the student.
- The PSMS program supports four students in each discipline and total of 16 students in a given year.

Program Goals

- To improve retention and graduation rates within STEM disciplines and to prepare students for the workforce and/or graduate studies.
- To identify and nurture student leaders within respective departments.
- To build student confidence while developing scientific skills.

Program Design

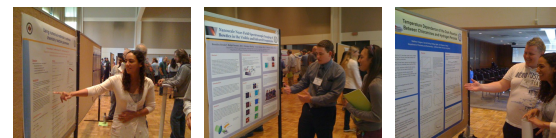
- PSMS program has a two-tier system (Starters & Scholars) similar to the successful RISE program in the College.
- PSMS activities are designed to form a **cross-disciplinary cohort** that will be an active part of the college-wide learning community.
- We aim to form robust and interactive bonds with other scholarship and student support programs **maximizing all possible resources** (RISE, McNair, Noyce, MARC, etc.)
- **PSMS-STARTERS** program is for students early in their college career. Activities are focused toward developing a community of learning by creating a supportive environment in which students develop good study habits, build a solid academic foundation, and establish stronger ties with the campus community. (**Application during Fall**)
- **PSMS-SCHOLARS** program is for advanced students who are taking upper division courses within their respective majors. The objectives are to prepare a highly-skilled workforce for government and industry or for a graduate-level education. (**Application during Spring**)

	Weekly study group	Monthly meeting with dept. faculty	Lunch/coffee with PIs	Annual family gathering	Annual survey & interview	Travel support	Tutoring fee for LAC	Research participation	Workshops (RISE/Career Ctr)	Apply to REU/Internship	Participate in Student Organizations
Starters	✓	✓	✓	✓	✓	✓	✓	*	✓	*	*
Scholars	✓	✓	✓	✓	✓	✓	✓	*	✓	*	*

✓ Required activities
* Recommended activities

Student Success

- Delora Gaskins (Chemistry Scholar) earned a **NSF Graduate Research Fellowship** and began PhD at Brandeis University in Fall 2011.
- Victoria Marsh (Math Scholar) was selected to the CSULB **McNair Scholars** Program.
- Three students presented a poster during **CNSM Student Research Symposium** in September 2011.



(l to r): Victoria Marsh (Math Scholar), Brandon Hessler (Physics Scholar), and Mathew Chagono (Chemistry Scholar).

Evaluation & Challenges

- Summary of Group/Individual Interviews at the end of Year 1:
The financial support was the most useful aspect of the scholarship. It allowed the students to put more time into academic clubs and other university experiences, to allow them to spend more time and effort into coursework, and to apply for external programs (scholarships, fellowships, internships, etc.).
The students found the personal relationship with the PSMS faculty extremely useful (source of information/opportunities, better understand career options, at ease with approaching faculty in general).
- Evaluation questions:
 - Identify predictors of success for selecting students.
 - Impact of the program to individual students & to the respective department.
- **Recruiting** Scholars and Starters is a major challenge.



PSMS Cohort Fall 2011: Back row (l to r): Leo Palomera, Brandon Hessler, Sean Donovan, Brian Flores, Cesar Contreras. Front row (l to r): Christina Lopez, Victoria Marsh, Priscilla Macias, Linda Ta, Lindsey Skelton, Jessica Uglesich. (Mathew Chagono is not in the photo.)



PSMS Family Dinner in Fall 2011: We recognize that family buy-in and education are critical for many first generation students. To that end, we have a fall and spring mixer to meet with families and share the student achievements.

WE NEED YOUR HELP ADVERTISING THE PROGRAM TO STUDENTS.

More information available in the program website.

www.csulb.edu/psmscholarship

Acknowledgements:

- Prof. Dustin Thoman for his help and advice.
- Aimee Arreygue and SAS staff for their support.
- Katherine Lee and Sean Fujiwara.
- NSF and CNSM.

