

## NPS Provides Local College Students Valuable Research Experience

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Ever since he was a child, 23-year-old Rodrigo Sanchez knew he wanted to be an engineer. But as a first-generation college student with limited financial support, Sanchez didn't know how he was going to find the resources he would need to pursue his lifelong dream. But while studying at Hartnell Community College in nearby Salinas, Calif. two years ago, Sanchez found his answer. Still in its development stage, Sanchez applied to Hartnell's Science, Technology, Engineering and Mathematics (STEM) internship program, which would place him in a research internship at a partner institution. With funding from the National Science Foundation, Department of Education and NASA, the summer internship would give Sanchez an opportunity to participate in real-world research while getting paid for his efforts.

In 2008, Sanchez began his first summer internship at the Naval Postgraduate School (NPS), where he spent several weeks working in the school's Marine Propulsion laboratory. Sanchez returned to NPS the following year, and spent his entire summer working in the Control and Optimization Laboratories on the development of a small-scale autonomous Unmanned Ground Vehicle.

With the support he received from Hartnell College and the experience he gained from working on graduate-level research at NPS, Sanchez went on to become the recipient of the Matsui Foundation Scholarship as well as the NASA-MUST scholarship, which provides him with tuition assistance and a paid summer internship at one of NASA's space centers.

After four years at Hartnell, Sanchez took a pivotal step toward reaching his career goal by transferring to the California Polytechnic State University San Luis Obispo this past fall. He is expected to graduate in 2012 with a bachelor's degree in mechanical engineering, and plans to continue his education by earning a master's degree in the same field of study.

Just three years ago, the STEM internship program began as a partnership between Hartnell College, NPS and the Fremont Peak Observatory. Although just eight students participated, their success launched a number of initiatives that have since been institutionalized across the Hartnell campus and at a number of participating universities.

For the summer 2009 program, nearly 35 students were placed in 14 research institutions from across the state, including NASA-Ames Science and Technology Institute; University of California Los Angeles Summer Medical and Dental Education Program; Jet Propulsion Laboratory, California Institute of Technology; and NPS, which played a leading role by hosting almost half of the participating students.

Last year, the Cebrowski Institute formalized the internship placement process at NPS by reaching out to professors across campus and arranging a placement session with Hartnell students.

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Sue Higgins, the deputy director for the Cebrowski Institute, said she was thrilled that Associate Prof. Craig Martell and Lecturer Joe Welch, who helped build the partnership with Hartnell, asked the institute to formally manage the program at NPS. “Cebrowski is an interdisciplinary research institute that supports faculty research across campus,” Higgins said. “By instituting this program, we’re creating a conduit for Hartnell students to access NPS faculty while developing support for the faculty here.”

Concerned by its declining science and technology workforce, the Department of Defense (DoD) recently began looking at ways to recruit future generations into critical academic disciplines that support national security. Higgins believes the partnership between Hartnell and NPS supports the Navy and DoD’s educational initiatives, and called the program a “significant bridge between NPS’ existing strengths and our nation’s future generation of talent.”

Over the past two summers, the Cebrowski Institute has helped place 22 students in research internships with 16 NPS researchers. Of the 14 students who interned in 2009, five are currently in the process of being hired to continue their research efforts at the school.

For Sanchez, the internship at NPS gave him an enriching experience he may not have otherwise had. “Without this program, it would have been difficult for me to find an internship. So I really appreciate this opportunity because it gave me a chance to apply what I’ve learned in school,” Sanchez said. “But it’s not just the work experience and hands-on experience that are important,” he added. “It’s also the relationships you build with your mentors and advisors.” Sanchez’s internship advisors, Dr. Pooya Sekhavat and Dr. Mark Karpenko of the Mechanical and Astronautical Engineering department, said they were impressed with Sanchez’s work and effort.



“We were pleasantly surprised by Rodrigo, and we were very impressed with the way he was able to function independently,” Karpenko said. “In that respect, he was no different than any other graduate student we advise,” Sekhavat added. By inviting Rodrigo to help with their research, Sekhavat and Karpenko hoped to provide him with practical engineering knowledge as well as valuable research experience he could use in graduate school. “Rodrigo is on track towards getting his master’s degree, and we wanted to make sure he got this knowledge and obtained the additional credentials he deserves,” Karpenko added. “When he applies to graduate school, Rodrigo can say he published a paper with graduate school professors ... that’s gold.”

Sekhavat called the undergraduate internship program a “necessity” that not only helps students, but also benefits NPS researchers. “Bringing in students who excel in math and physics provides much needed help to us and our graduate students who have certain research tasks that provide a good learning opportunity for an undergraduate level student,” he said. “We always welcome such opportunities and are open to other potential partnerships similar to the one established with Hartnell College.”

Karpenko, who first became interested in research as an undergraduate, hopes the internship program will help get young students thinking about pursuing careers in research. “These students are being exposed to an environment they might not otherwise have access to, and just by being here it’s very possible they might consider a career doing research,” he said. “The kind of experiences the students get is phenomenal and is really going to change the way they think about their studies, and what they get out of the next few years as they earn their bachelor’s degrees.”