

# Apprentice Researchers

Summer Research Program 2009



## **Program Description:**

The University of California at Santa Barbara California Nanosystems Institute (CNSI) facilitates a multidisciplinary approach to develop the information, biomedical and manufacturing technologies that will dominate science and economy in the 21st century.

The Apprentice Researchers program is hosted by CNSI, a collaborative effort established by the State of California, situated on the campuses of UC Santa Barbara and UC Los Angeles, which targets the scientific and technological possibilities of working at the molecular scale. It is an integrative venture that calls upon expertise from a very broad scope of disciplines, including biology, chemistry, physics, engineering, materials science, computation, and media arts. The research at CNSI begins with nanostructure building blocks and determines new ways of seamlessly integrating those building blocks into new materials, devices and systems. By 'mixing and matching' components having different electronic, magnetic, optical, and structural properties, our ultimate goal is to create 'designer materials' and designer systems that will have capabilities far exceeding those found in nature.

In the Apprentice Researchers at CNSI program, high school students and teachers have the opportunity to do hands-on scientific investigations in a dynamic research environment. The students and teachers chosen for the program work with graduate student researchers in UCSB science and engineering laboratories, gaining first-hand experience in how science research is conducted.

## **Program Activities:**

Laboratory Research: On Mondays, Tuesdays, Wednesdays and Thursdays after a morning group meeting, each apprentice spends the day working with her/his own graduate student mentor on a research project. Research project topics will be located in physics, chemistry, biology, and materials labs, as well as chemical, mechanical and electrical engineering labs, many of which study of microscopically small (nanometer scale) structures and materials.

Training, Workshops, Discussions and Field Trips: On Wednesdays Apprentices learn presentation skills and give scientific talks based on their research projects. On Fridays, apprentices work together, as a group, participating in a variety of activities such as lab classes, computer workshops, visits to campus and local laboratories, and seminars.

## **Program Time Requirements:**

The program lasts for 4 weeks, from June 15 to July 11. For the course of the program, apprentices will spend 8 hours a day in the laboratory and/or in related meetings. The work day starts at 9:00 am and runs until 5:00 pm. Transportation will be arranged for students coming from north Santa Barbara County and Ventura County. Apprentices are expected to attend every day of the program, and should consider their commitment to this program as they would to any job. Students will receive a \$1000 educational stipend for their participation.

*You can learn about previous Apprentice Researcher projects from the web site:*

<http://education.cnsi.ucsb.edu/ar.html>

## Student Application Requirements

*Students must satisfy the following requirements:*

- Currently enrolled in high school as a junior (11th grade) student.
- Completion of two years of high school science by the end of this school year. At least one of these courses must be chemistry or physics.
- Living in the Santa Barbara or Ventura counties during the summer with family or guardians.

*Student application must include:*

- A completed application form
- A type-written essay, no longer than one page, on the following topic:

Essay topic:

*Explain why you are interested in the Apprentice Researcher program, and what you feel you can contribute to it. In particular, we would like to know about your interest in science, your ability to work with groups of people, and any previous work experience you've had.*

- Students do not send transcripts or grades.
- Students from Dos Pueblos, San Marcos or Santa Barbara High Schools should not ask their teachers to write recommendations as we will consult with them directly.
- **Students from other schools should submit two teacher recommendations along with their application material.**
- **Students must be US Citizens or Permanent Residents to apply for the program.**

## Selection of Students

In selecting the student apprentices, we will consider the following:

- Interest in science, science activities and applications
  - Ability to participate as a responsible and effective team member
  - Ability to communicate
  - Experience in previous science courses
  - Experience in previous jobs (including volunteer work)
1. The student's written application and essay will be evaluated according to the above criteria, together with teacher recommendations.
  2. Personal interviews will be conducted and evaluated in light of the above criteria. Personal interviews will be the final screening process, so not all applicants will be contacted for an interview. Students who are not available for a personal interview cannot be accepted to the program.

**Applications should be mailed to:**

Lubi Lenaburg — Apprentice Researchers  
CNSI  
University of California  
Santa Barbara, CA 93106-6105

**APPLICATIONS MUST BE E-MAILED OR POSTMARKED  
BY FRIDAY, MARCH 20, 2009.  
LATE APPLICATIONS WILL NOT BE ACCEPTED.**

If you have any questions about this application, contact Lubi Lenaburg at 893-8527 or [lubi@cnsi.ucsb.edu](mailto:lubi@cnsi.ucsb.edu).