



PHASE

A Newsletter of Skaggs Center Internships

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December 2009

ESRL Student Coordinator Prepares to Host Harvey Mudd College Representatives

Harvey Mudd College in California is an engineering and science college that competes for students with schools like MIT. The student body is about 750 students. The College developed the Clinic Program over 45 years ago to engage students in solving real-world technical problems for corporate clients, and national and research laboratories. Over 330 organizations have participated and students have completed around 1,300 projects. The engineering, mathematics, physics, and computer science departments each conduct Clinic projects that draw upon the unique talents of students and faculty advisors.

Ann Thorne, ESRL Student Coordinator, has been communicating with Barry Olsan, Director of Corporate Relations for Harvey Mudd College, in an attempt to establish a working relationship with students. On Thursday, December 3rd in a conference call with Barry Olsan and Dr. Patrick Little, plans were discussed for an upcoming January 12th visit to Boulder which would include a power point presentation and discussion of possible projects between ESRL and Harvey Mudd College. Ann Thorne will be contacting ESRL laboratories and other NOAA and

NIST scientists who may be interested in hosting Harvey Mudd College students.

There are two main components to the Clinic Program. One is to provide a technical liaison to hold weekly conferences with students. The other component is the financial component which is a fixed cost of \$45K. (The cost can be paid at the beginning, by fiscal year, at the end of the program or in scheduled installments.)

Ann asked what ESRL would get for participating. Under the program students work in groups of four or five who work with the guidance of a student project manager, a faculty advisor, and a liaison from the sponsoring organization. Projects begin in September, involve about 1,200 to 1,500 work hours and are completed in the following May. The sponsor's liaison outlines the project requirements, approves the team's proposal for accomplishing the work, and receives weekly progress reports. In most cases the student team visits the sponsoring organization during the first month and typically provides a summary presentation to senior officials at the end of the project. Sponsors retain full rights to all intellectual property that is developed.

Barry Olsan stated that the Clinic is the centerpiece of the professional practice component of the College's curriculum. "Our clients pay a fixed fee for student teams to work on current problems which the company or agency needs solved. The objective is to produce useful results on an open-ended authentic project to the client's satisfaction within the constraints of time and budget." Under the program the students do the work; the faculty advises, coaches, and evaluates; the client informs, guides, and accepts or rejects the results. The program has resulted in ten to fifteen patent disclosures being filed annually.

Listed below are two reviews of projects that have been approved under Physics Clinic Projects:

Jet Propulsion Laboratory

Infrared Interferometer

Fall 1999 (5 students), Spring 2000 (5 students)

The Jet Propulsion Laboratory Clinic team constructed a modified Michelson interferometer to combine the light from two 10-meter Keck telescopes situated on the island of Hawaii. The system combines two 1" infrared beams of light from the telescopes and incorporates feedback control to ensure that the optics are correctly focusing the collimated beams into fiber optic cables. The telescope system will allow for the direct detection of Hot Jupiter planets in other solar systems.

Arete Associates

Software Simulation of Water Surface Optical Glitter

Fall 1997 (5 students), Spring (5 students)

The Clinic team investigated and developed models for the reflection of the sun off the ocean's surface to create an improved "glitter" routine for Arete Associates' RenderWorld, their software package for modeling natural scenes. Current software techniques do not allow for efficient simulations of light reflection off small-scale water waves (referred to as glitter) because it is too computationally intensive. The team developed a software implementation of the recommended solution to Arete Associates.

During the upcoming January 12th meeting, Dr. Little said he would also like to discuss developing an air quality monitoring instrument. He said he had received grant funding from the Beckman Coulter Foundation to develop an instrument that would be of no benefit to Beckman Coulter. Dr. Little said that his students would greatly profit by working with NOAA in Boulder and looked forward to exploring possibilities and holding discussions with scientists during his visit.

Tony Tafoya also explored the possibility of collaborating on a joint proposal to NSF. Both ESRL and Harvey Mudd College students could profit from this collaboration and this could develop into a pipeline for future ESRL employees.

Season's Greetings



*A WINTER WONDERLAND GREETING
FROM BOULDER, COLORADO*

Education, Science, Careers

The Objectives of the ESRL Intern Program

- A. To seek a broad development and expansion of internship opportunities for high school, college and graduate students and high school teachers.
- B. To assist and encourage NOAA organizations in establishing goals and identifying the best possible sources for the recruitment, employment, training and advancement of student Interns.
- C. To encourage and actively support the promotion and advancement of Interns already employed.
- D. To analyze and determine the educational and professional needs of students seeking entry and advancement in employment; and, whenever possible, provide appropriate training and counseling services to meet these needs.
- E. To establish and continually upgrade a broad range of contact with supervisors and Interns across the country via personal visits, telephone calls, e-mails, and periodic newsletters.
- F. To respond to the reasonable requests from non-NOAA groups for student referrals when their objectives are supportable and similar to the ESRL PHASE program.
- G. To enhance the promotion of student excellence, pride, and camaraderie through organized and regular social gatherings which will serve to bind students together.
- H. To provide a forum for major research issues of local and national significance so that students may be better informed and may express their views through seminar presentations before their peers and supervisors.

Key Advisory Board Functions

The key functions performed by the PHASE Advisory Board include: **Advocacy on Employment and Education Issues**, **Membership and Outreach**, and **Consultation with Students and Supervisors**. The following is a brief description of each function:

Advocacy on Employment and Education Issues

The advocacy function is performed when advisory board members take a pro-active role in seeing that an employment related issue is addressed by the appropriate community, education or government organization. This function typically involves the following: assisting students and parents with local school issues, e.g. summer jobs, internships, grades and course requirements; informing the local community on student internship opportunities; and researching employment opportunities and various employment related topics such as housing, travel, and community demographics.

Membership and Outreach

The membership committee is charged with an ongoing program of recruiting and retaining members of the Advisory Board. This involves coordinating a yearly membership drive for new members. The outreach function is performed by going out into the community to explain NOAA internship programs and communicating the assistance that can be provided. Typically, this function involves attending meetings and briefings, networking with NOAA agency representatives, providing orientation briefings to newcomers, attending training sessions and education workshops - both as participants and presenters.

Consultation

Consultation services are typically private and are provided to students, parents and teachers who need explanations related to PHASE documents and procedures. This function typically involves mediating an issue at the lowest level before it escalates and assisting the ESRL Student Coordinator with employee issues.



***PHASE* is a publication
of the ESRL Student
Coordinator**

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PHASE seeks to inform
employees and students on
employment programs and
internships.

Editors: Tony Tafoya and
Ann Thorne

MISSION

The mission of the Practical Hands on Application to Science Education (PHASE) program is to have students benefit from a science intern program at a Federal facility.

The objectives of the program are (1) for laboratories to identify student projects that provide a learning environment and focus on practical hands-on activities; (2) to provide laboratories with profiles of students who have an interest in considering NOAA and science in general as a positive career choice; and (3) to inform students of career opportunities in NOAA.

*For more information visit: PHASE@noaa.gov and
esrl.noaa.gov/outreach/student_programs*

HAPPY HOLIDAYS

**ANN THORNE AND I
WISH READERS OF
THE PHASE NEWSLETTER
HAPPY HOLIDAYS WITH
BEST WISHES FOR THE
NEW YEAR.**

Tony Tafoya

COLLABORATING ORGANIZATIONS

GOVERNMENT AGENCIES:

NOAA/OAR/ESRL
NOAA/NWS/SWPC
NOAA/NESDIS/NGDC
NIST
NTIA
Workforce Boulder County

HIGHER EDUCATION:

University of Colorado/CIRES
CU SORCE Program

COMMUNITY:

SACNAS
MESA
AISES
National Image, Inc.
Blacks-In-Government (BIG)

SCHOOL DISTRICTS:

Boulder Valley (BVSD)
St. Vrain Valley (SVVSD)



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Please add me to newsletter mailing list. (Please print or type.) Issue #12, 2009

Name	
Home Address or School Address	
City, State, Zip Code	
Telephone and E-mail Address	

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