

Increasing Participation of Women and Minorities in Science and Engineering at the Los Alamos National Laboratory

*Abad E. Sandoval, Science and Technology Base, University Programs
Mail Stop M700, Los Alamos National Laboratory, Los Alamos, NM 87545
(505) 667-1230 (Voice), (505) 665-5596 (Fax)*

Abstract – *“Careers/Internships at the Los Alamos National Laboratory”*

The United States Department of Energy (DOE) national laboratories have been called our nation’s “crown jewels” of science and research development. Spread across the country, this large and unique network has generated some of the most impressive science and engineering work ever taken in places like Los Alamos, Sandia, Lawrence Livermore, and other DOE national laboratories. With the end of the Cold War and the re-orientation of much of the lab’s work from defense to civilian efforts, especially in the science and technology area, there is a wide array of opportunities for women and minority professionals, especially for near and recent graduates. This workshop will explore careers and internships within the Los Alamos National Laboratory, and attempt to provide answers to questions by those considering working in the citadels of science and engineering.

Los Alamos is in an ideal location for avid hikers and backpackers. The town itself is nestled against the foothills of the Jemez Mountains, and the Sangre de Cristo Mountains are just east of us, about 40 miles away. Participants are encouraged to visit the Bandelier National Monument, Santa Fe, the American Indian pueblos, and the many other fascinating sites near Los Alamos. For some of you, New Mexico could be a new experience, both geographically and culturally.

Science Education Programs

At Los Alamos National Laboratory, we view science, math, engineering, and technology as the cornerstones of our nation’s future success. To develop and maintain these capabilities while fulfilling our mission, we are using the Laboratory’s resources—its scientists, technicians, and facilities—to increase science literacy and broaden the nation’s pool of qualified personnel. We conduct science education programs for teachers, students, parents, and the public on a local, state, and national level. We have placed a special emphasis on including minorities and women in all of our programs to help them achieve equal

representation in the fields of science, math, and technology.

Our education programs are funded by the US Department of Energy (DOE) and contribute to the DOE’s mission of using scientific and technical resources to increase the United States’ competitiveness in the global market. Science education programs will also develop a diverse, well-educated, and scientifically literate workforce and maintain world technical leadership. Los Alamos National Laboratory (LANL) is one of the world’s premier scientific institutions. An internship experience would be a great opportunity to further a student’s career.

Science and Technology Base/University Programs (STB-UP) Mission

The University Programs Team supports the science and technology base of Los Alamos National Laboratory (LANL) by fostering technical excellence through collaborative research with colleges and universities, carrying out post secondary science education, activities, and programs. Special emphasis is placed on supporting defense programs technology base, diversity, creating a qualified technical pool of diverse candidates (for full-time employment); and programs that enhance the technical staff, capabilities, and infrastructure of our partner institutions.

STB-UP Opportunities Historically Black Colleges and Universities (HBCU)

The HBCU program was established to develop and draw on the scientific and technological capabilities of HBCU students. The goals of the program include increasing the number of HBCU students graduating with degrees in science and technology and enhancing the career prospects of these graduates. Applicants to the HBCU program at LANL must currently be enrolled in an undergraduate program at an HBCU school or have applied to/been accepted into a graduate program at an HBCU school. Summer internships and co-op

positions are available for undergraduate students. Graduate appointments are available for summer or up to one-year research internships.

Science and Technology Alliance Program (S&TA)]

The S&TA mission is to increase the representation of African Americans, Native Americans, and Hispanics in the fields of science and engineering. The mission is to be accomplished by strengthening the mathematics, science and engineering education capabilities of the participating minority universities and by affording opportunities for faculty and students of participating minority universities to engage in research at US government research laboratories, private sector research, and development programs. Summer internships and co-op positions are available for undergraduate students. Graduate appointments are available for summer or up to one-year research internships.

Underrepresented Minority and Female Program (URMF)

The URMF program was established to assist underrepresented minorities and females from the Southwest to achieve parity representation in science, mathematics, engineering, and technology. The program focuses on students from New Mexico, Texas, Colorado, Arizona, and California. The principal goal of the URMF program is to encourage students from underrepresented classes to choose careers in science, mathematics, and engineering and to encourage them to excel in these fields. Summer internships and co-op positions are available for undergraduate students. Graduate appointments are available for summer or up to one-year internships.

Two-Year College Initiative (TYCI)

LANL has been instrumental in organizing a consortium in Northern New Mexico of two-year post secondary institutions (Northern New Mexico Community College, Santa Fe Community College, Luna Vocational Technical Institute, San Juan Community College, and University of New Mexico-Los Alamos). The primary objective of the consortium, known as the Northern New Mexico Consortium of Advancement of Technology (NNMCAT), is to develop and strengthen associate degree programs in emerging technologies. Summer internships and co-op positions are available for undergraduate students.

Mentored Collaborative Research Project (MCRP)

The MCRP provides students and faculty teams the opportunity of work along side LANL researchers on "target" project areas that have relevance to LANL's core defense missions. The MCRP focuses on undergraduate, graduate students, and faculty from New Mexico and regional universities, with an emphasis on diversity. Faculty and students work as a team, for example, in computer science, engineering, and material science. Thus providing an additional experience of working together in a multi-discipline manner, much like the common work experience at LANL. The internships are for summer research experiences.

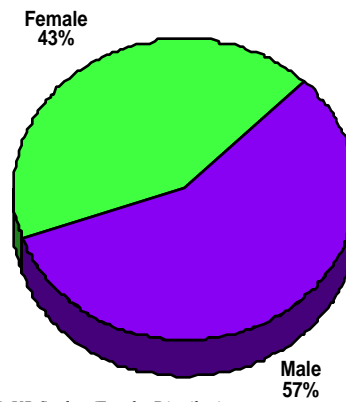


Figure 1. STB-UP Student/Faculty Distribution By Gender and Program

Student Participation

Figures 1,2,3, and 4 show the data representation of our STB-UP programs for 1996 and 1997. Tables 1 and 2 show the overall LANL student programs by ethnicity for 1996 and 1997.

Type of Appointment	# Total	# White	# Did Not Specify	# Minority	# Am Indian	# Asian	# Black	# Hispanic
HS Co-op	38	13	1	24	1	0	1	22
UGS	700	307	35	358	27	32	9	290
GRA	603	421	26	156	7	60	15	74

Type of Appointment	% Total	% White	% Did Not Specify	% Minority	% Am Indian	% Asian	% Black	% Hispanic
HS Co-op	100.0	34.2	2.6	63.2	2.6	0.0	2.6	57.9
Under-Grad	100.0	43.9	5.0	51.1	3.9	4.6	1.3	41.4
Grad RA	100.0	69.8	4.3	25.9	1.2	10.0	2.5	12.3

Table 1. LANL Student Programs by Ethnicity for 1996

Type of Appointment	# Total	# White	# Did Not Specify	# Minority	# Am Indian	# Asian	# Black	# Hispanic
HS Co-op	61	26	1	34	1	1	1	31
Under-Grad	889	403	40	446	28	46	15	357
Grad RA	448	301	29	118	4	54	10	50

Type of Appointment	% Total	% White	% Did Not Specify	% Minority	% Am Indian	% Asian	% Black	% Hispanic
HS Co-op	100.0	42.6	1.6	55.7	1.6	1.6	1.6	50.8
Under-Grad	100.0	45.3	4.5	50.2	3.1	5.2	1.7	40.2
Grad RA	100.0	67.2	6.5	26.3	0.9	12.1	2.2	11.2

Table 2. LANL Student Programs by Ethnicity for 1997

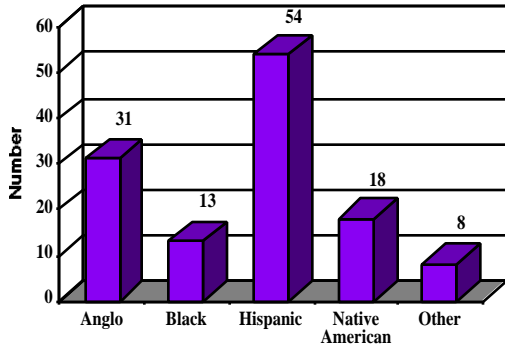


Figure 2. 1996 STB-UP Student/Faculty Distribution By Ethnicity

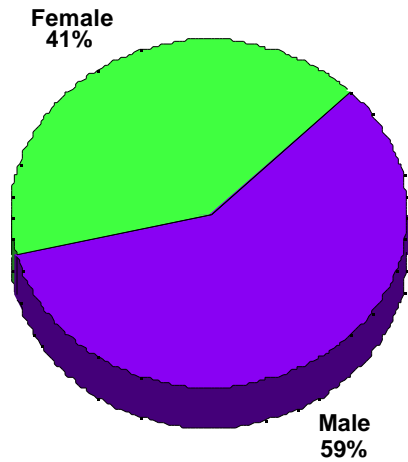


Figure 3. 1997 STB-UP Student/Faculty Distribution By Gender and Program

New Program Responsibilities in 1998

Located in Notre Dame, Indiana, GEM focuses its mission on increasing the participation and graduation of underrepresented minority students at the master's and Ph.D. levels. GEM is a jointly sponsored membership consortium of university and employer members, of which Los Alamos National Laboratory is one.

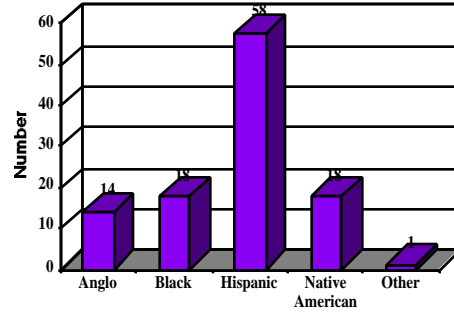


Figure 4. 1997 STB-UP Student/Faculty Distribution By Ethnicity

The Laboratory supports two new master's-level engineering students per year. Participating students are required to complete internships at the Laboratory during the summer immediately preceding and following their first year of graduate school. The minimum acceptable GPA is 2.8/4.0 scale. For more information, visit the GEM website:

National Physical Science Consortium (NPSC)

Located at New Mexico State University, Las Cruces, New Mexico, NPSC offers graduate fellowships in the Physical Sciences. The mission is to target talented minority and female physical science students, with the objective of creating a pool of new research scientists while providing diversity and balance to meet the future needs of academia and industry. NPSC is a jointly sponsored membership consortium of university and employer members, of which Los Alamos National Laboratory is one. The Laboratory supports one student fellowship for a maximum of six years or until completion of the degree. A GPA of 3.0/4.0 is required for participation in the program. For more information, visit the NPSC website:

Oak Ridge Institute of Science and Education (ORISE)

The ORISE program is a DOE-funded fellowship program for graduate students. The mission of the program is to ensure an adequate supply of appropriately trained scientists and engineers to carry out DOE's mission. The research areas covered in the fellowships include energy development, environmental management, and personnel safety and safeguards. Fellows perform a three-month research practicum at Los Alamos National Laboratory. For more information, visit the ORISE website:.