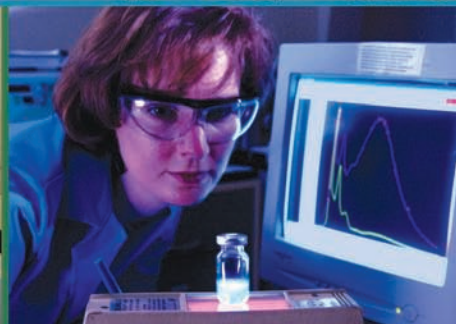


Science Education Opportunities

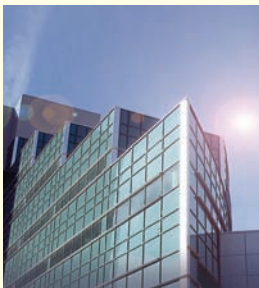
at Los Alamos National Laboratory



precollege • undergrad • graduate • postdoc • teachers

Los Alamos National Laboratory Education Programs


Los Alamos National Laboratory is dedicated to science education in northern New Mexico and to cultivating the next generation of Laboratory employees. The multitude of student and teacher programs illustrates the importance of education to the Laboratory.



Located in historic Los Alamos, New Mexico against the backdrop of the lush Jemez Mountains, Los Alamos National Laboratory (LANL) offers its education program participants hands-on experience and a wealth of opportunity to learn from some of the brightest scientists in the nation.

The Laboratory's science education programs benefit all ages. Teacher professional development programs ensure that the latest science, math, and technology instruction reaches school-age classrooms. The next generation of scientists is then cultivated through high school cooperatives, technical training and apprenticeships, undergraduate internships, graduate research assistantships, and postdoctoral appointments.

Work is tailored to each student's degree focus or research area and mentors provide guidance and encouragement throughout the experience. Some students continue on as Laboratory employees. Others return to school or enter their profession with a broader understanding of how to apply their knowledge in a professional environment, taking with them professional relationships that last a lifetime.



"You are important to our future. It is important to us that you have a rewarding experience, and we want you to come back as either students or employees."

Michael R. Anastasio
Director





High School Cooperative Program

The High School Cooperative (Co-Op) Program exposes high school students entering their senior year to a variety of technical and administrative career fields. A Laboratory Co-Op position is an invaluable experience that prepares students for both college and the professional world. Laboratory representatives visit participating New Mexico high schools each year to discuss the various opportunities and recruit students for full-time summer appointments. Students then have the option to continue part time during the academic year. Students are selected based on aptitudes and interests, grade point average, and number of credits toward graduation.

Eligibility requirements

- Must be a high school senior
- Must be at least 16 years of age
- Minimum 2.8 cumulative GPA (unless school requires a higher GPA to participate)



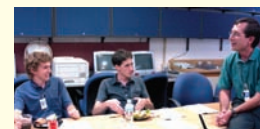
Undergraduate Student Program

The Undergraduate Student (UGS) Program provides undergraduate students with the opportunity to gain real-world experience in their field of study. Both technical and administrative internships are available. Appointments are available for 90-day summer internships, with the option to continue working part time during the academic year. Students can participate in the program for a maximum of six years while pursuing a bachelor's degree and three years for an associate's degree.

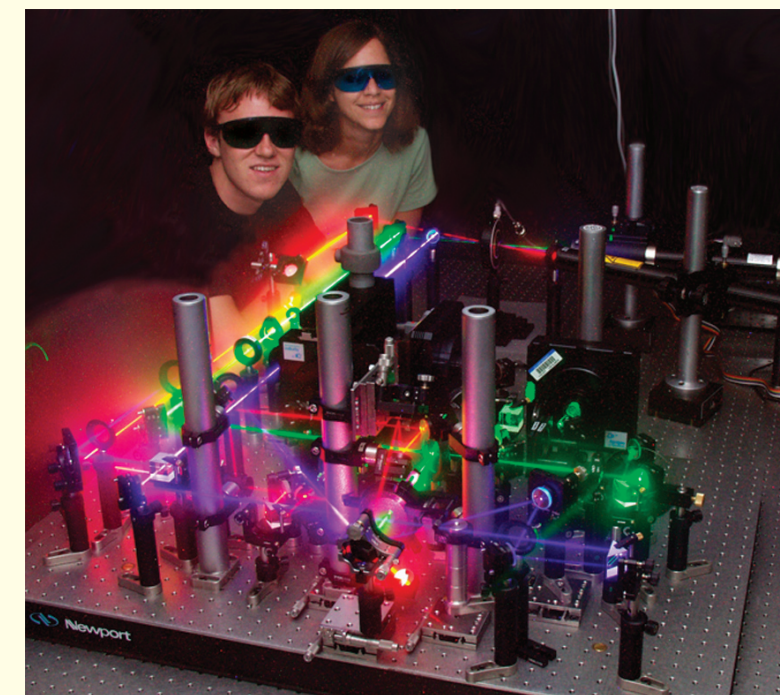
Students who have graduated but are not yet enrolled in a graduate program may participate in the UGS program as a post-baccalaureate for up to one year.

Eligibility requirements

- Provide documentation of acceptance into an undergraduate academic program
- Enroll in and complete a minimum of nine credit hours per semester in an accredited college or university degree program
- Maintain a minimum 2.8 cumulative GPA



25% of all LANL employees are former students or postdocs.

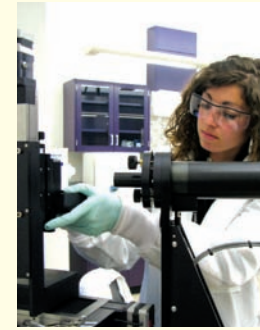


Graduate Research Assistant Program

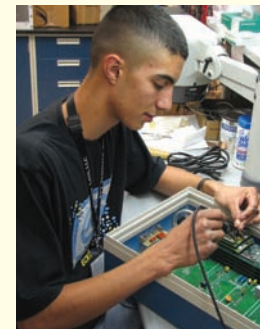
The Graduate Research Assistant (GRA) Program is a year-round opportunity for graduate students in technical and administrative fields to gain career and research experience while pursuing master's degrees. Appointments in the GRA program are from 90 days to one year and students may be eligible for renewal for up to four years while pursuing a master's degree, or for up to six years while pursuing a PhD.

Eligibility requirements

- Must have a bachelor's degree by the date of hire
- Must be admitted and in active status in a graduate program
- Must enroll in and receive credit for a minimum of six credit hours per semester
- Must maintain a minimum 3.0 cumulative GPA



*About 40%
of all technical
staff hires
annually are
former students
or postdocs.*



Technician Training Programs

In cooperation with local higher education institutions, the Laboratory sponsors a variety of technician training programs designed to enhance the workforce in Northern New Mexico.

Electro-Mechanical Technician Program (EMTP)

EMTP students concurrently enroll in courses at the University of New Mexico-Los Alamos and work at the Laboratory for a period of two years. These courses are specially designed for Lab technical positions. During their hours at the Lab, they receive hands-on training from mentors that supplements their coursework. Graduates of the program may apply to positions at the Lab or work in their local communities.

Machinist Apprenticeship Program (MAP)

Over the course of 8,000 hours, MAP trains apprentices through classroom instruction at Northern New Mexico College and through on-the-job experience in machine tools operations at the Laboratory. Apprentices work under a senior machinist and receive the education and experience required for a certification from the New Mexico State Apprenticeship Council as journeyman machinists.





Postdoctoral Appointments

At LANL, postdoctoral (postdoc) appointees can immerse themselves in twenty-first century science, work in a scientifically rich research and development environment, present and publish research, contribute to the overall research efforts at the Laboratory, advance knowledge in the areas of basic and applied research, and strengthen our national scientific and technical capabilities.



Postdoc opportunities are available in a wide variety of scientific fields that include, but are not limited to, biosciences, chemistry, computing, earth and space science, engineering, materials science, mathematics, and physics.

To be considered for a LANL postdoc appointment, candidates must be nominated and sponsored by a member of the Laboratory's technical staff. Candidates may review the technical divisions and the science subject areas of the Laboratory to identify a potential sponsor, or candidates may discover potential sponsors at national and international conferences and workshops, by networking with colleagues, or through journal publications.

All sponsored postdoc candidates are reviewed and selected by the Laboratory's Postdoc Committee. A candidate must have completed all Ph.D. requirements by commencement of their postdoctoral appointment and be no more than 5 years beyond the granting of their Ph.D. when reviewed by the Postdoc Committee.



6

LANL invests over \$50M annually in student and postdoc salaries.



Teacher Professional Development Programs

Math and Science Academy (MSA)

The MSA supports K-12 teachers in learning and developing a standards-based method of teaching. Teachers involved with the MSA devote over 200 hours per year outside of their regular school day learning, sharing, and evaluating their work.



The MSA Summer Institute focuses on curriculum, assessment, and instruction for standards-based education, classroom management, collaboration, using technology as a classroom tool, math and science content, and cognitive coaching.



Incorporating MSA into the New Mexico schools has raised the level of education in the state, as demonstrated by students' steadily rising test scores. The program's success results from the overwhelming support of the Laboratory, the northern New Mexico business community, and the New Mexico State Legislature.



Los Alamos Space Science Outreach (LASSO)

The NASA-supported LASSO Program is a summer workshop series that instructs teachers in developing science, math, and technology-based education materials, projects, and curriculum. Teachers develop skills in basic physics concepts, the solar system, Earth's magnetosphere, NASA missions, and data processing and analyses. Additionally, LANL scientists engage the participating teachers in a variety of activities.



The knowledge that teachers gain through LASSO diversifies their students' educational experience and expands their knowledge beyond the scope of textbooks. The teachers' enthusiasm is contagious and motivates students to take an interest in learning about space science.

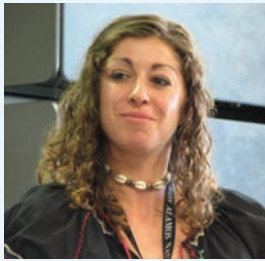
Southwest Science Teachers' Academy

The Southwest Science Teacher's Academy (SSTA) is a three-year professional development program for middle and high school teachers sponsored by the Department of Energy Office of Science. Teachers spend from four to eight weeks each year at the Laboratory as research associates, investigators, and lifelong learners. Lab mentors guide teachers through the weeks, encouraging teachers to think innovatively and discover the many wonders of science and technology. The teachers take this knowledge back to their classrooms, enhancing the classroom experience.



7

Program Participant Perspectives



Armanda Roco is a student at the University of Virginia and is sponsored by the DOE Science Undergraduate Laboratory Internship Program. She is interested in several areas of biology. One of the main things Armanda enjoys about being at the Laboratory is practicing what she has learned in school in a professional capacity.

Armanda's research involves working with the controlled assembly of protein-mediated lipid multilayers. She created synthetic multilayered structures and experimented with their fluidity to determine what could cause their deterioration.

Her advice to other students, "Take advantage of your research project and get all the experience you can here at LANL. Be open—don't hold back. Get out and meet people and take advantage of all the opportunities you can. Stay active."

Joel Joseph is a recent graduate of the Electro-Mechanical Technician Training Program. Joel has always been interested in electronics and feels that the EMTP Program provided a perfect opportunity to train in the field and work at the same time. He is now a full-time Lab employee. During his time in EMTP, Joe worked mainly in general electronics—wiring, circuit boards, and soldering electrical connections. He is now pursuing an associate degree at the University of New Mexico-Los Alamos. His coursework includes classes in Autocad and soldering. Joel earned a NASA certification for soldering while in the EMTP.

Joel highly recommends the program to other students. "Just stay on top of your schoolwork. Don't fall behind, and do the best you can."

David Mascareñas was an undergraduate student at Colorado State University when he came to the Laboratory as part of the Engineering Institute. David has since received his B.S. in mechanical engineering. During graduate school at the University of California-San Diego, he was supported by a LANL Engineering Institute Fellowship.

When asked for his advice to other students, David encouraged each student to attend as many classes and/or seminars and presentations that relate to their field of study or their interests. He also suggests getting to know as many people as possible that are interested in the same research field.



David Chavez began his association with LANL as a high school student from Taos through the American Chemical Society (ACS) Project SEED I and II. He continued his research experiences at LANL during his undergraduate studies at Caltech and graduate studies at Harvard. At the completion of his PhD, David was hired as a Distinguished Reines Postdoctoral Fellow. While a postdoc, he was the recipient of a Distinguished Postdoc Performance Award.

David is interested in preparing novel molecules for energetic materials applications. During his research experiences at LANL, David had the opportunity to participate in research in a wide variety of technical fields such as physical chemistry, chemical engineering, and organic chemistry projects that supported science in the national interest. Through these experiences, he was able to interact with world-renowned scientists on the development of cutting-edge technology.

"We are very fortunate to have the scientific opportunities available to students and postdocs here in Northern New Mexico," David said. "Some of the world's most compelling problems are being addressed at LANL and this gives both students and postdocs an experience that is unequalled."



Mary Alice Hawkins says that her experience as a Rural Community Development Volunteer in the Peace Corps showed her the impact teachers have on their students' lives. She learned about the Math and Science Academy during her first year of teaching and knew that MSA was the kind of continuous professional development she needed to become an effective teacher.

After the first summer institute, Mary Alice returned to the classroom with a curriculum map for science, classroom procedures, and a plan for improving classroom management, as well as a better understanding of assessment. Focusing on standards has improved her ability to assess students. New classroom procedures helped her become a more effective educator. The following years of MSA built upon the foundation set that first summer. She has also taken advantage of the Master of Arts degree program in Teaching of Mathematics and Science that MSA offers in partnership with New Mexico State University.

Student Internship Program at a Glance

Although LANL hires students on a year-round basis, the majority of the students participate in an internship during the summer months. The purpose of an internship at LANL is to have a well-rounded, safe, rewarding, and challenging experience. To this end, many activities are coordinated for the students. Examples of the activities and events include:

- New Hire Orientation (New Student Orientation held May-June)
- General Employee Training
- Safety and Security Training
- Professional Development Courses (Winning Resume/ Curriculum Vitae/Behavioral Interviewing)
- LANL and Los Alamos Area Tours of facilities and attractions
- All Student Meeting with LANL Director
- All Student and Mentor Picnic
- Annual Student and Postdoc Symposium
- Student Seminars
- Annual Student Survey
- Distinguished Student and Mentor Performance Awards

LANL also has a Students' Association that coordinates various activities for students. All students are encouraged to get involved and participate in the SA.



Program Participant Comments

“Great intellectual experience and excellent opportunities to do world-class research in a beautiful environment”

“LANL is a great work environment. If your job is related to your field of study, many doors of opportunity can open up for you. Many of the experiences at LANL are unique and hard to come by.”

“The Lab provides interesting and instructive insights into technical science, as well as an introduction to a secure, national laboratory.”

“Most of my classroom learning came from text books. Here at the Laboratory, I get to use what I have already learned and gain new experiences and skills that no textbook will ever be able to teach me.”

“Being a postdoc at Los Alamos has been a wonderful experience. The scientific environment is overwhelming; one is surrounded by literally thousands of PhDs. “As a postdoc, I have been given tremendous resources and a impressive amount of flexibility and independence. This has allowed me to accomplish things that would have been unthinkable in a different environment.”

“Having an internship at LANL is as good as gold on your resume.”

“Students here are given a lot of freedom to choose their own projects and research subjects of interest.”

“Working here has given me the chance to apply some of the information I encountered in school. It also introduced me to the working culture of a large corporation.”

“MSA has shown me how to properly assess students and how to find gaps in student knowledge and how to correct that thinking. Before I would teach the curriculum and test, and now I find the questions the students should know before I teach, I use the standards to find these questions. From there I make up my assessment, and then teach my curriculum, so the students always know what to expect.”

“The cognitive coaching sessions were very useful for me in that they made me more conscientious of planning for instruction in an effective manner. I always viewed lesson planning in a traditional mode, whereas, with the MSA cognitive coaching, various elements of instructional planning were much more effective in impacting student learning.”



Additional information

High School, Undergraduate, and Graduate Programs

www.lanl.gov/education/jumpstart/

For more information, call 505-665-8899

Postdoctoral Program

www.lanl.gov/science/postdocs/

For general inquiries, contact postdoc-info@lanl.gov

For more information, call 505-665-8899

LANL Postdoc Association

www.lanl.gov/projects/pda

Electro-Mechanical Technician Training Program

www.lanl.gov/education/

For more information, call 505-665-8899

Machinist Apprenticeship Program

For more information, email map@lanl.gov

For more information, call 505-665-8899

LANL Students' Association

www.sa.lanl.gov

Math and Science Academy

www.lanl.gov/education/teachers/mathsci.shtml

For more information, call 505-665-8899

Los Alamos National Laboratory, an affirmative action/equal opportunity employer, is operated by Los Alamos National Security, LLC, for the National Nuclear Security Administration of the U.S. Department of Energy under contract DE-AC52-06NA25396.

