

NORTHERN CALIFORNIA

After several rejections, MESA San Francisco State University senior Luis Bill's perseverance helped him land his dream internship. ♦ See some of San Jose State University's newest MESA graduates. ♦ Jared Dozal went from constructing houses as a contractor to constructing water filtration systems as a philanthropic engineer. ♦ Students visit a local renewable energy source.

See pages 2 & 3



CENTRAL CALIFORNIA

Ivy league-bound, and MESA to thank. ♦ A sudden family move drastically changed Hilda Gonzalez's educational path. ♦ Although she had little guidance on college choice from family, two degrees are on the horizon for MESA student Linh Nguyen. ♦ MESA community college students interact, build leadership skills at retreat.

See pages 4 & 5

SOUTHERN CALIFORNIA

Middle and high school MESA students save "lives" with robotics. ♦ San Diego MESA programs use proximity and numbers to their advantage. ♦ NASA summer program shows Imperial Valley students the science behind space travel. ♦ From designing microchips to managing quality control, MESA alum Arturo Torres has run the engineering gamut.

See pages 6 & 7



NASA/MESA Build Ties

NASA AND MESA are forging closer partnerships throughout the state as the space agency increases its involvement in education.

"We think MESA is a great program," said Russ Billings, pre-college programs manager for the Aerospace, Education, Research and Operations Institute. The institute implements NASA's education programs for Dryden and Ames Research Centers. "We believe we can use the success we've had with MESA in Imperial Valley as a model for us to move forward to additional MESA sites," he said.

Two of the largest collaborations are part of NASA's Summer of Innovation (SoI) project to improve science, technology, engineering and math education for middle school students. NASA SoI sponsored a two-week aeronautics summer program for 225 Imperial Valley MESA center students, which included a trip to the Dryden Flight Research Center. (See story, page 7)

Another SoI partnership, with the NASA Ames Research Center, has resulted in MESA's Resources for Indian Student Education (RISE) center acquiring Starlab, a portable planetarium. Starlab will be used in



COURTESY NASA

a project that focuses on Native American approaches to learning astronomy.

NASA internships were garnered by MESA college students throughout the state this summer. Christopher Halcon from Hartnell College earned the NASA Motivating Undergraduates in Science and Technology (MUST) Scholarship, including a \$10,000 award and a paid summer internship. Los Medanos College students Mario Shaun Regacho, Angelique Sims, Brian Delgadillo and Chris Sanchez were selected to participate in NASA's Microgravity University in Houston. Luis Bill, a San Francisco State University student, worked on an internship with NASA's Intelligent Robotics Group—his third NASA internship. (See story, page 2)

A NASA panel was featured in last summer's Student Leadership Retreat, an event for MESA community college students to explore math and science careers. ♦

MESA Middle School National Champs

A FOUR-STUDENT TEAM from Hudson Magnet Middle School won the MESA National Engineering Design Competition by besting top-ranked student teams from other MESA states. Kyrene Aganon, Michelica Balajadia, Christine Le and Rose Chelsea Lubang built the winning wind energy device. The team was led by Hudson advisor James Mills. The students are served by the MESA center housed at the CSU Long Beach College of Engineering.

The team beat out hundreds of other teams in California for the honor of going on to the nationals, held at Microsoft headquarters in Washington state. The wind energy project teaches students design principles such as torque, generating and storing wind energy as well as how to think like environmental scientists.

This win marks the second national victory for advisor Mills, whose Hudson team took top honors in last year's National Engineering Design Competition. ♦

SJSU MESA Grads 2011



PHOTOS DANIELLE MCNAMARA

Perseverance + MESA = Success

WITH AN INTERNSHIP at Carnegie Mellon University and three NASA internships under his belt, one could think Luis Bill, a senior at San Francisco State University, had it easy.

But Bill said the backing of MESA as well as personal perseverance was what helped him succeed.

It took him three years of rejections from NASA's Intelligent Robotics Group for him to earn an internship. This spring he finally landed a gig developing navigation software for moon-bound robots. The 22-year-old will graduate in the spring with an electrical engineering degree and hopes to get a masters degree in controls or robotics.

Bill was first introduced to MESA at Skyline College. He became a tutor, gained leadership experience and received internship and scholarship application

assistance. He continues to be involved with MESA at SF State.

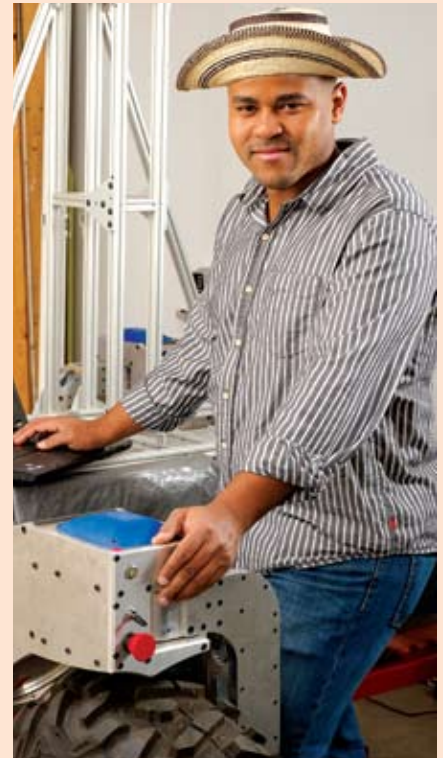
"For me, everything started with MESA," he said.

"MESA helped me meet other people with similar interests—other engineering students, other geeks. We supported each other."

With MESA's encouragement, Bill landed a NASA Robotics Academy internship as well as a NASA Robotics Boot Camp internship. (See *NASA story*, page 1)

This summer Bill served as an intern at Carnegie Mellon's Robotics Institute. He is also a National Science Foundation science, technology, engineering and math scholarship recipient. Bill hopes to eventually work in space robotics for NASA, building planetary rovers.

"Without MESA I wouldn't have gotten this far," he said. ♦



COURTESY LUIS BILL

MESA Student Blends Engineering, Philanthropy

WHEN JARED DOZAL began taking classes at Ventura College he didn't know what engineering was.

Then he found MESA.

Three years later Dozal is a senior environmental engineering major at UC Berkeley and project manager of a clean-water project in Peru with the UC Berkeley Engineers Without Borders chapter.

He spent 10 days in Peru this summer with a team of students building filter systems to remove naturally occurring arsenic from a village water supply. His group hopes to return in January.

Dozal said the transition from community college to Berkeley was fostered through MESA.

While at Ventura, Dozal said MESA helped him with study skills, academic planning and application processes to successfully transfer. He also received a MESA-administered National Science

Foundation Scholarship in Science, Technology, Engineering and Math.

"I was grateful to be involved with MESA because it made everything go smoothly when I didn't know what I was doing," he said.

The 34-year-old enrolled at Ventura College after his housing construction work dried up following the economic downturn. Dozal said he always liked math but didn't know how to apply it.

Dozal—the first in his family to go to college—said he is thankful to the MESA staff at Ventura College.

"Whenever I needed help Marcos (Lupian, MESA director) was there," Dozal said. "He pointed me in the right direction." ♦



(Right) Water drips through a series of containers that hold a naturally purifying compound in the bottom.

(Below) Dozal constructs a water filter from local products to make the well water drinkable.



COURTESY APRIL LEA GO FORTH

Tours Highlight Renewable Energy Program

THIS SUMMER, MESA students learned that renewable energy efforts are taking place right in their local backyards.

The Resources for Indian Student Education (RISE) MESA center in Alturas took students to the Hatchet Ridge Wind Energy project in Burney. The newly opened wind farm generates the power equal to the annual energy use of 44,000 California homes.

MESA advisor Matt Wyatt said visiting the wind farm teaches students about the possible benefits of renewable energy and reinforces the concepts of a MESA engineering design competition that highlights wind energy.

Wyatt also led students on visits to Burney Falls to learn about hydroelectricity and Medicine Lake for insight on geothermal energy.

Wyatt, a member of the Washo Nation, is also a MESA alum. He participated in hands-on math and science projects in elementary school, which he said strengthened his understanding of the subjects throughout the rest of his schooling.

"Being involved with MESA now and helping kids work on similar projects as I once did reminds me of how MESA ignited my hunger for fun, fulfilling knowledge," he said.

The tours were part of a week-long summer program for middle and high school MESA students that covered topics such as chemical reactions, graphing and statistics, and data collection. ♦

COURTESY JARED DOZAL

Thanks to MESA, Harvard-bound

SINCE MOVING TO California when he was a fifth grader, Octavio Viramontes has accumulated some major accolades. He was valedictorian of Delano High School, graduated with a 4.6 GPA and is attending Harvard University this fall on a \$100,000 scholarship.

He is also one of only four students in the country to receive the Proton Scholarship, funded by a Connecticut-based technology company.

And he credits MESA with helping him succeed.

The son of Mexican immigrants, Viramontes said he was inspired during his high school freshman year by the performance of MESA seniors at regional MESA days.

"They won medal after medal, and trophies. That pushed me to work hard in MESA and all academics," he said. "I was always good in math but I had no idea how to apply my knowledge. MESA helped me with that. It gave me perspective."

In the following years, he became secretary, vice president and president of the MESA club at Delano, which is served by the CSU Fresno center Lyles College of Engineering.

Viramontes completed a summer cancer research medical program at Stanford University before beginning classes at Harvard in August. ♦

Visalia Student Prepares for Cal Poly

HILDA GONZALEZ HAD hopes of attending a four-year college in southern California, but when her family moved from the LA area to Visalia just after her high school graduation, her family insisted that she move with them to the Central Valley.

"My family didn't want me to be away from them. I was devastated," she recalled.

So Gonzalez started at Visalia's College of the Sequoias and found the MESA program. It turned out to be the best move she could have hoped for.

"I wouldn't be on the career path I am now, without MESA. It would have been hard for me to navigate the system and excel without MESA's support," said Gonzalez.

Gonzalez transferred to Cal Poly San Luis Obispo where she began classes this fall as a material engineering major and as the first in her family to attend a university.

Gonzalez said her parents see that she is prepared now to move away from home. She has mastered study skills, learned about career options and gained real-life experience interacting with people from different cultures and backgrounds.

"All of that came from MESA," she said. "Finding MESA has really been a blessing for me." ♦

Student Decides on College, Career Path



COURTESY LINH NGUYEN

LINH NGUYEN'S PARENTS came to the U.S. as refugees from Vietnam with little education, and none of her older siblings went to college. So Nguyen didn't have guidance at home on how to tackle the higher education system.

"MESA showed me not only why it was important to go to college but also how to get accepted and thrive," said the Stockton native, who has been involved with the program since middle school.

For Nguyen, the design planning for MESA Day projects helped identify her interests early on. With MESA's encouragement, the Stockton resident applied to the University of the Pacific, where she now is a civil engineering major. Nguyen continues her involvement with MESA's undergraduate program on campus.

"I always liked math and science but MESA definitely helped gear me towards engineering and opened my eyes to it as a career path," the 22-year-old said.

Nguyen will graduate this fall from a dual program with both a bachelor's degree in civil engineering and a master's degree in engineering science.

MESA continues to help her while a student at Pacific with academic support and assistance in finding scholarships and jobs.

"College was a different world for me, so I really appreciate the MESA program here," she said.

Nguyen's goal is to get an engineering job that allows her to give back to MESA and her community. ♦

Nguyen walked during a summer 2011 graduation ceremony.

Student Leadership Retreat 2011



More than 150 MESA community college students from throughout the state met at the UC Santa Cruz campus for the annual MESA Student Leadership Retreat. This year's event included field experiments handling chemistry and engineering design, internship/scholarship panel with NASA employees, and hands-on breakout sessions. The retreat is a chance for community college students to interact, network and build leadership skills.

PHOTOS DOUG CODY



Saving the World One Robot at a Time

MORE THAN 250 middle and high school MESA students built robots to save mock communities as part of the MESA Robotics Challenge held at the University of Southern California last spring.

The event, which was hosted by the USC Viterbi School of Engineering and co-sponsored by Xerox and Raytheon, tasked teams to build robots that would either detect a bomb or remove a nuclear threat from a staged community.

More than 20 high school and 20 middle school MESA teams from USC, Chapman University, CSU Long Beach, CSU Los Angeles and Imperial Valley centers participated.

Robotics is a fast-growing engineering sector and major. Engaging young students in such activities makes them aware of future careers in these fields.

Cheryl Bhence, a volunteer judge and engineer at Xerox, said that the students were inspiring.

"This is an amazing exercise of the real world challenges, and the creativity of the students is exactly what this country needs," she said.

Several MESA centers participate in robotics competitions in other parts of the state. ♦



PHOTOS DANIELE MCNAMARA

San Diego Alliance: Model for the Future

A LONGSTANDING PARTNERSHIP between MESA programs in the San Diego area has become the model for other such relationships throughout the state.

For more than 10 years, the San Diego MESA alliance has enhanced the continuum of services to MESA students by working together on efforts from fundraising to event planning.

The San Diego MESA alliance is made up of the pre-college programs at San Diego State University and Imperial Valley, the community college programs at San Diego City and Southwestern Colleges and the college-level program at San Diego State. The five programs combined serve more than 2,000 students.

The enhanced collaboration among these centers allows for greater industry support and fundraising opportunities, as well as an increase in the reach and

number of students served. The alliance strengthens the relationships between all MESA segments with local or regional companies who look to employ local, high quality talent.

Alliance directors hold annual planning sessions, regular director meetings, track collective results and market them, hold a shared calendar and rotate leadership among the five directors. Joint events give students the chance to interact with MESA participants across educational levels.

The success of the San Diego MESA alliance has led to the formation of a new alliance in the South Bay area that includes the pre-college and college programs at San Jose State University and UC Santa Cruz and the community college programs at Cabrillo, Gavilan, Hartnell and Mission Colleges. ♦



NASA Opens World of Space Travel to Imperial Valley MESA Students

MESA MIDDLE SCHOOL students got a thrilling up-close look at the technology behind space travel, thanks to NASA.

A two-week summer program sponsored by the space agency provided hands-on and computer-based learning for 225 students from five school districts served by the Imperial Valley MESA center.

Students learned about rockets and aerodynamics by touring the NASA Dryden Flight Research Center in Palmdale, going aboard the 747 that carries the space shuttle, meeting with engineers, and building and launching their own model rockets—some of which flew more than 500 feet in the air.

The initiative was a part of NASA's new Summer of Innovation Program, an effort to infuse NASA-themed science, technology, engineering and math (STEM) activities into summer programs for middle school students. NASA and MESA have built partnerships throughout the state in various capacities. (See story page 1.)

NASA awarded the Imperial Valley MESA center a \$20,000 grant, which

allowed the program to leverage additional money and in-kind contributions from the five districts.

Students came from the Calexico, Calipatria, El Centro and Holtville Unified School districts and the Westmorland Union School District.

"Students were given the opportunity to study space exploration, while incorporating many of the engineering concepts learned through the MESA program," said Mario Garcia, Holtville Middle School principal. "The two programs working in conjunction with one another kept the students interested and engaged with a desire for learning more about the sciences. We are extremely proud to have participated

in the NASA Summer of Innovation Program in conjunction with MESA and hope that this partnership continues to provide our students with this once-in-a-lifetime experience." ♦

Engineer Recalls Major Inspiration

IN MIDDLE SCHOOL, his grades were less than stellar. After high school, he enrolled at Long Beach City College, transferred to CSU Long Beach as an electrical engineering major and got involved in MESA.

Arturo Torres was unprepared for the rigors of an engineering major and sometimes despaired of being able to complete his degree. But MESA surrounded him with others who were determined to make it, and that made a huge difference.

"I'd be in the MESA center, tired, doing homework at midnight, 1 a.m., ready to give up, but I'd look around and see my MESA friends still at it. I thought "if they're not giving up, neither am I."

Since earning his degree, the 34-year-old has worked on unmanned space planes for Boeing and designed microchips for RTG, a small semiconductor company. He is also on the Society of Mexican American Engineers and Scientists (MAES) national board of directors.

Now Torres is a quality system manager for Hills Pet Nutrition, a Colgate/Palmolive company. He ensures that products are made in accordance with regulatory standards.

Torres—the first in his family to graduate from college—said for him MESA has meant the opportunity for a better future. ♦



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NEWS BRIEFS

🌀 MESA EXPANDS TO PENNSYLVANIA

Pennsylvania has become the most recent state to establish a MESA program. That state's legislature voted in July to become the eighth state to adopt California MESA as a model for STEM support in K-12 and higher education.

The MESA initiative is based at Temple University's College of Engineering in Philadelphia and is headed by Dr. Jamie M. Bracey, director of STEM Education, Outreach & Research at the university.

MESA Pennsylvania was officially recognized during a ceremony at the Philadelphia Navy Yard on August 27. More than 60 Philadelphia School District middle and high school students presented projects made during MESA summer academies to Philadelphia Mayor Michael Nutter and top Navy commanders at the ceremony. The academies were funded through the Office of Naval Research with support from engineers from the Naval Ship Systems Engineering Station, the Urban Youth Racing School and the Mayor's Office of Community Services.

"It bodes well for MESA PA's future that over 100 people came out in a hurricane to cut the ribbon for our newest state program," said Oscar Porter, MESA USA president and MESA California executive director. "We are excited to add PA to the MESA USA roll."

Other statewide MESA programs operate in Arizona, Colorado, Maryland, New Mexico, Oregon, Utah and Washington. Individual community college campuses that use MESA's community college model are active in half a dozen other states.

🌀 MESA ONLINE

MESA now uses QR codes in written materials so readers can easily navigate to additional web content. A QR code (short for Quick Response) is a type of bar code that allows users immediate access to content by using their smart phones. A variety of free applications exist for all smart phones used through the device's camera. Simply use the app to take a picture of the QR code—the image will direct your phone to the designated web page. Try the QR code at right to access MESA's alumni questionnaire.

🌀 MESA ALUMNI RECONNECT

MESA wants to reconnect with its alumni. If you were ever involved with MESA, please fill out our alumni questionnaire. You can update us on what you're doing now, "Friend" us on Facebook or LinkedIn or select ways to become involved with MESA.

Simply scan the code at right with your smart phone camera or visit our web site at: <http://www.ucop.edu/mesa/getinvolved/alumniinfo.html>

🌀 MESA ATTENDS US NAVY EVENT

MESA was represented at the 2011 US Naval Academy Summer Centers of Influence Conference held August 2 to 5. The goal of the conference is to expose educators to the academy. Imperial Valley MESA center director Jeanette Ramos represented MESA at the conference. The admissions process and summer science, technology, engineering and math programs were highlighted with alumni and parent panels, presentations and tours.

ARE YOU A MESA ALUM?

See the story at left to find out how you can use the QR code below to access MESA's alumni questionnaire.



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MESA (Mathematics, Engineering, Science Achievement) serves educationally disadvantaged students with an emphasis, to the extent possible by law, on students from groups with low rates of college eligibility, so they can excel in math and science and attain math-based degrees from four-year institutions. MESA is administered by the University of California. For a free subscription to MESA News, send your name and address to MESA, Attention: Marilyn Baker, or via email to marilyn.baker@ucop.edu.

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