

UNLV | HOWARD R. HUGHES College of ENGINEERING

Updates in Innovation

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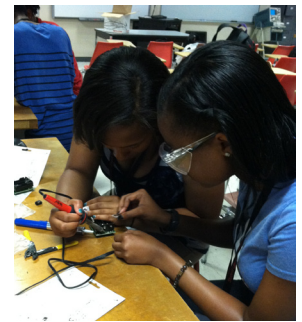
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What We Did on our Summer Vacation...



Summer break means barbeques, fireworks, vacations, and relaxation. But for the College of Engineering, it's also a chance to connect with young students from around the country, and to introduce them to various aspects of engineering. This summer, the college has played host to three such activities.

Through the support of a grant funded by the U.S. Department of Education, and brought to UNLV by the Nevada System of Higher Education, the College of Engineering held a three-day nanotechnology camp in June, designed to broaden students' interest and encourage them to study science and engineering at the college level. Sixteen area high school students came to UNLV's campus and participated in hands-on activities, learning about nanotechnology and its cutting-edge applications. Mechanical engineering Professor HuiZhao, along with other engineering faculty and graduate students, led them in projects that included synthesizing nanoparticles, making dye-sensitized solar cells, and using nanoparticles to enhance the efficiency of solar cells.

In July, the college continued its relationship with the Fort Valley State University Cooperative Developmental Energy Program, once again hosting the Mathematics, Science, and Engineering Academy, a summer residential outreach program for academically talented minority and female high school students. Various members of the College of Engineering faculty, staff and advisory board members, including Professors Eugene McGaugh and Jaci Batista, Jeff Markle, and Raul Flores provided attendees with an introduction to the fields of

engineering and computer science through lectures and interactive experiences, like rocket building/launching and working with circuit boards. Their itinerary also included visits to the Hoover Dam, Grand Canyon, and Nevada Solar One.

In collaboration with the University of Nevada, Reno, and with the support of the U.S. Department of Transportation and Transit UTC, Professor Hualiang Teng of UNLV's department of civil and environmental engineering and construction organized and led a transportation engineering camp in July to encourage students to explore careers in transportation engineering. In addition to visiting the Hoover Dam, Nevada Railroad Museum, and the Freeway and Arterial System of Transportation (FAST), the 20 Nevada high school students in attendance were also given presentations by the Regional Transportation Commission. The camp concluded with a hands-on visit to UNLV's Transportation Research center, which included the chance for the students to try out the driving simulator.

This year, the college will continue to reach out to young generations, introducing them to STEM disciplines through FIRST Robotics events, engineering workshops with middle and high school students, participation in the NASCAR STEM Initiative, the MATH Counts Winter Camp, and the annual "Introduce Kids to Engineering Day," held on campus in conjunction with Boys & Girls Clubs of America.

A Message from Interim Dean Rama Venkat

Greetings,

Being situated in one of the most diverse metropolitan cities in the nation, with one of the least diversified economies, presents the Howard R. Hughes College of Engineering with challenges that are not uncommon, but that pose vital questions in today's world – how can we continue delivering quality education to a diverse student population? While federal research dollars are on the decline, how can we increase our research activities? How can we best prepare our students for what has become a highly competitive workforce while also contributing to the diversification of our local economy?

This year, our college has risen to the challenge of answering these questions. The Fred and Harriet Cox Senior Design Competition, now in its 13th year, continues to flourish and turn out new ideas and technologies, with several of those entrepreneurial-minded undergraduate competitors now in the process of forming local start-up companies. The college's research activities in water, energy, and transportation – all themes of great local relevance – have doubled in the last couple of years, with the promise of delivering new discoveries and well-trained researchers in these areas of regional need. Our collaborative spirit has resulted in several new initiatives in the last year:

- A stronger relationship with UNLV's Lee Business School, with a primary focus on business plan development of engineering senior design projects to create local technology-based start-ups;
- A semesterly conversation series with engineering and technology pioneers to bring public awareness to the history of topics – like gaming, aviation, and water issues – and their contribution to our local community;
- A program to assist our senior design competition students with the filing of provisional patents for their projects through the generous pro-bono services of an engineering alumnus;
- Industry-sponsored graduate fellowships to address workforce development needs of local industries.

I invite you to contact us, should you wish to hear more about our activities or research. We always welcome collaboration in various arenas with our peers, and would love to hear about your ideas.

Best wishes for the upcoming year,



Rama Venkat
Interim Dean



Checking in with Team Las Vegas

At UNLV's Paradise Campus sits DesertSOL, a 754-square-foot, energy efficient, modular green home, and the university's first entry into the U.S. Department of Energy's Solar Decathlon, which challenges teams of college students around the world to design and build solar-powered homes. Twenty teams from as far away as the Czech Republic will converge upon Orange County Great Park this October to showcase their homes in 10 different juried and measured contests to determine a winner.

Since first being selected in January 2012 to compete, Team Las Vegas - an interdisciplinary crew of 60 UNLV students - has tirelessly handled every aspect of the project. With construction complete, the team is now disassembling and transporting the home to Irvine, California to reassemble it for the competition, after which it will reside as an exhibit at Las Vegas' Springs Preserve. For more information about Team Las Vegas and DesertSOL, visit www.SolarDecathlon.unlv.edu.



Faculty in the Spotlight: Distinguished Professor Robert Boehm

Twenty-three years after coming to UNLV, Robert Boehm has earned his stripes as an innovator in solar energy research. His title of Distinguished Professor – the highest honor that can be granted to UNLV faculty – reflects not only the extraordinary qualities he embodies as a teacher and scholar, but also his national and international reputation in the field of mechanical engineering. As Director of the university's Center for Energy Research, named this year as one of five U.S. Department of Energy Regional Test Center Sites, Boehm remains on the forefront of continued research to make solar energy more affordable and reliable. Over the years, Distinguished Professor Boehm has done countless interviews about his research and work. But we wanted to go beyond the standard fare and find out a little bit more about who he is.

What kept you busy this summer?

I have been writing proposals for research projects, both here at UNLV as well as for a joint submission with another university. In addition, Professor Jaci Batista and I, as Co-Principal Investigators, were quite busy setting up details related to the large National Science Foundation collaborative project that was awarded to UNLV, University of Nevada, Reno, and the Desert Research Institute earlier in the year. I took two trips to China – one to Inner Mongolia to examine an attempt to develop a “low-carbon” town, and another to Guilin to give two papers. I also worked on some writing projects whose deadlines are rapidly approaching.

What inspired you to get into engineering?

It was almost an accidental thing. I was raised in a small town, and I was the first of my family to go to college. I didn't know what an engineer was when I was getting ready to go away to school. However, a friend, who was one year older than I, went into mechanical engineering. He told me about it, and I decided to go into that major also. It was one of the luckiest decisions I ever made.

If you weren't an engineer, what do you think you'd be doing instead?

I can't imagine what it would be because I am so glad I became an engineer. It is even greater that I

was able to become an engineering professor and work with students.

How long have you lived in Las Vegas and what do you like the most about living here?

I moved to Las Vegas in 1990 as the first chair of the newly formed Mechanical Engineering Department. I like many things about Las Vegas including the ability to work with solar energy. I also like that fact that the topography is fairly flat, and I can ride my bike to and from school.

Aside from abundant sunshine, what makes Las Vegas an ideal place for energy research?

One of the things that has been true at UNLV while I have been here is that there has been a great deal of freedom to pursue projects of interest. It is also true that Las Vegas has a small town feeling in that it is easy to get to know great people.

What would people be surprised to know about you?

I am an old car buff. I certainly like things mechanical, I like driving old cars, and I am trying to rebuild a 1928 Chevrolet. The latter is going very slowly, however.

What has been your proudest moment?

It is very hard for me to define only one. I have been lucky to have lived long enough to have experienced many.

Several of them have been here at UNLV.

What is the last book you read or would recommend?

The Swerve by Stephen Greenblatt. It is a great history of how the thinking of the Greeks was rediscovered and helped Europe move into the Renaissance.

What do you enjoy the most about working with students?

The enthusiasm and intellect they show. I learn a great deal from them.

What is the most important piece of advice you give to your students?

If you have the option, try to pick a job that will be something you enjoy doing, and that will carry you through life.



Box 454005
4505 S. Maryland Parkway
Las Vegas, NV 89154-4005

702-895-3699
unlv.edu/engineering

Western Lithium Makes Major Equipment Donation

The College of Engineering recently received a major donation of battery equipment, valued at \$66,500, from Western Lithium Corporation. Comprising of an inert gas glove box, planetary ball mill, eight-channel battery mixer, and various other items, the equipment is being used by an interdisciplinary group of students and faculty, with the goal of enhancing aspects of energy materials research at UNLV. "Our donation provides equipment access for new students for educational and training purposes," says Western Lithium Corporation's CEO and President, Jay Chmelauskas. "A larger pool of students with access to lithium equipment and technology will support more investment and larger research projects in the growing lithium sector."

The equipment will be located in UNLV's High Pressure Science and Engineering Center (HiPSEC), an interdisciplinary facility used by undergraduate and graduate students from the colleges of science and engineering. Ravhi Kumar, Associate Research Professor in the department of physics & astronomy and a member of HiPSEC, will lead teams of students using the new equipment to conduct materials research. "This equipment enhances the capabilities of characterization facility necessary for materials research at UNLV," Kumar says.

The College of Engineering wishes to thank Western Lithium Corporation for their generous support.