



# COSMOS UC San Diego

California State Summer School for Mathematics and Science

## Alumni Newsletter Spring 2016

### Welcoming our new COSMOS faculty!



#### **CLUSTER 1: Dr. Diba Mirza**

Dr. Mirza is an Assistant Adjunct Professor in the Department of Computer Science and Engineering at UCSD. She received her Ph.D. and M.S. in Computer Engineering from the Electrical and Computer Engineering Department at UCSD. Her research is in the field of embedded systems and sensor networks. She has worked as a researcher on multidisciplinary projects in the ECE and CSE Departments and in collaboration with the Scripps Institution of Oceanography at UCSD. She is very enthusiastic about teaching at COS-

MOS.

#### **CLUSTER 4: Dr. Ingrid Tomac**

Dr. Tomac is an Assistant Research Scientist at the Department of Structural Engineering, University of California San Diego. She wishes to dedicate her research efforts towards creating a better world through exploration and development of civil engineering infrastructure for supporting renewable and sustainable energy resources. She aims to encourage women from under-represented groups to join the exciting world of science and engineering.



#### **CLUSTER 6: Dr. Joe Watson**

Dr. Joseph Watson has serviced UCSD as a top administrator from organic chemist to Provost to Vice Chancellor. He attended City College of New York from 1957 to 1961, and graduated with a Ph.D. in organic chemistry from UCLA in 1966. He joined the faculty of UCSD that same year as an assistant professor of chemistry. In 1970, he was appointed provost of Third College and in 1981 he became Vice

Chancellor.

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# WHAT'S HAPPENING AT UCSD!



Check out what the cluster instructors have been up to!

## World's largest outdoor shake table gets \$5.2 million from NSF



for the next five years. The table, which can carry structures weighing up to 2,000 tons, can replicate the ground motions of most of the world's largest earthquakes. It has been used since 2004 as a resource for NSF-funded researchers from around the nation to test innovative technologies and designs for seismic safety of new buildings and retrofitting techniques for existing structures. In the past 11 years, research at UC San Diego's shake table, which is housed at the Englekirk Structural Engineering Center, has led to important changes in design codes for commercial and residential structures and new insights into the performance of geotechnical systems, such as foundations, tunnels and retaining walls. It also has helped validate the use of new technologies to make buildings more likely to withstand earthquakes. "The table also will open numerous educational opportunities, welcoming more than 500 middle- and high-school students every quarter," said *Lelli Van Den Einde*, co-principal investigator on the grant and a teaching professor at the Jacobs School. These students will learn about seismic safety at their schools, then test structures they build out on the table. Van Den Einde is also the lead instructor for Custer 4, When Disaster Strikes: Earthquake Engineering, at COSMOS.

[http://ucsdnews.ucsd.edu/pressrelease/worlds\\_largest\\_outdoor\\_shake\\_table\\_gets\\_5.2\\_million\\_from\\_nsf](http://ucsdnews.ucsd.edu/pressrelease/worlds_largest_outdoor_shake_table_gets_5.2_million_from_nsf)

## New Experience Engineering Initiative aimed at giving students more hands-on experience

Each team was responsible for designing and building remote-controlled robots. The robots' job was to pick up whiffle balls, representing BB-8 type droids, and drop them onto platforms of various heights, representing X-wing fighters.

The goal of the exercise is to teach students the basic principles behind the design and building process for a robot, said Tolley. The class's other goal is to teach students problem-solving and expose them to challenges they will encounter in real-world situations, said *Nathan Delson*, a teaching professor who co-leads the class with Tolley. "I want to empower students," he said, "to allow them to go from an idea to getting something working."

"This is how engineers learn problem-solving and troubleshooting, as well as working in teams and delivering a working device by the deadline", said Delson. "You can't learn how to make decisions under pressure without actually going through the process."

The class, MAE 3, is part of an effort to provide more hands-on learning opportunities for all engineering students, from incoming freshmen to seniors. The Jacobs School-wide [Experience Engineering Initiative](#) involves all of the engineering departments, from structural engineering to nanoengineering. Projects in other classes in fall quarter include designing and programming robots, programming model boats for autonomous movement and designing and building miniature cars powered by hydrogen fuel cells.



[http://ucsdnews.ucsd.edu/feature/the\\_robotic\\_force\\_awakens\\_at\\_uc\\_san\\_diego](http://ucsdnews.ucsd.edu/feature/the_robotic_force_awakens_at_uc_san_diego)



# Congratulations to Shirley Miranda from Morse High School (Cluster 1 Teacher Fellow), who was named one of five 2016 County Teachers of the Year!

When you do what you love with passion, success won't be far away.

After Morse nominated math teacher Shirley Miranda as Site Teacher of the Year, she applied to be considered as San Diego District Teacher of the Year. Each of the 42 districts picks one winner and one runner-up from each elementary, middle school, and high school division. Those six from each district are eligible to apply to be considered as San Diego County Teacher of the Year. The top five teachers receive the award after extensive writings and interviews.

Miranda and the four other teachers titled San Diego County Teacher of the Year were honored at a San Diego State University (SDSU) football game on Nov. 14, 2015 and will be honored at a Padres baseball game this month. "There is a lot of fun stuff, but there is also the opportunity to share what I am passionate about, which is the most exciting part about being awarded," Miranda explained.

Miranda won this award due to her passion for and contributions to the Science, Technology, Engineering, and Mathematics (STEM) programs in San Diego. "I think what I do goes beyond the four walls of my classroom," Miranda stated. "I do a lot that helps the STEM community at large. There has to be an appreciation for STEM in order for our society to move forward."

Miranda is heavily involved in a statewide and international level as well. She participates in the Greater San Diego Science and Engineering Fair, the State Science and Engineering Fair, the International Science and Engineering Fair, and the California State Summer School for Mathematics and Science (COSMOS) program at the University of California, San Diego (UCSD) to further STEM education.

"If I can get students to appreciate math-based information, then that contributes to building the human experience. I am trying to help them be the best person they can be," Miranda explained. "That is the best part in the adventure of teaching." Miranda impacts her students stressing hard work and dedication.

Miranda believes it would have been easy to pass on the application because of time consumption, but giving up was not an option. "You have to challenge yourself because you never know what you are capable of," Miranda explained. "It would be very easy to say a teacher from Morse would never amount to that because we are from Morse, and we get so down on ourselves for that. But on any day, any person can come out on top." Miranda emphasizes the philosophy of "trying" to her students, which she incorporated into this award. "If you do not try, then you have already discounted yourself," Miranda discussed. "You can lose, but you will definitely not win. It is all about putting yourself out there."

Written by, Ashley Chan (Editor-in-Chief of Morse Code)



# facebook Contest

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Send us your favorite COSMOS memories & photos and we will post on our page!

PICS OR  
IT DIDN'T  
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The most liked post of the month will receive a \$small Prize!

Must complete all 3 steps to be eligible for contest prizes.



Want to be featured?  
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stories for the next issue!

## CLASS OF 2016



Did you graduate this year? From high school? College? Please email us at [cosmos.ucsd.edu](mailto:cosmos.ucsd.edu) to let us know! We want to hear from you.

### Important Dates

**COSMOS 2016**

### **SUMMER PROGRAM**

Sunday, July 10—  
Saturday, August 6

### **COSMOLYMPICS**

Friday, July 10  
If you would like to be a judge,  
please email us at  
[cosmos@ucsd.edu](mailto:cosmos@ucsd.edu)



## Student Spotlight

Daniel Cheah  
(UCSD Cluster 5 2014)  
and Jessica Lee  
(COSMOS UC Santa Cruz)  
at the Envision  
Grand Opening  
presenting their  
work!

## ALUMNI SURVEY



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