

CSUN works to propel satellite into orbit

A group of engineering students and faculty hope to launch the CubeSat, a shoebox-sized dish packed with solar cells

TAYLOR VILLES CAS
PRODUCTION STAFF

Students and faculty are gathering to work on elevating CSUN's engineering status about 200 miles up with the development of their new satellite.

The group of engineering students, supervised by faculty from the electrical and computer engineering department, is known as the CSUN CubeSat Project Team. They are working to launch a type of satellite, known as a CubeSat.

"It's going to be a very intelligent little box," Professor James Flynn said during a team meeting on April 3.

Measuring up to a whopping 10 by 10 by 20 centimeters, the shoebox-sized satellite will be packed with solar cells, software and other donated equipment.

The project is estimated to cost between \$60,000 and \$80,000. This is considered cheap, since the average commercial satellite can cost upwards of around \$300 million, without even being launched.

"And that's all just parts.

Our labor, of course, is for free," joked Sharlene Katz, Professor of Electrical and Computer Engineering.

Typically, it would cost another \$45,000 just to launch the satellite. But thanks to their sponsorship from the Jet Propulsion Laboratory (JPL) in Pasadena, the satellite will be hitching a ride with a shuttle in a few years.

"This is our fourth major sponsored project," Professor David Schwartz said.

The project has received parts and funding from JPL, along with funding from Associated Students. They have also gotten parts from other laboratories.

Currently, the project is in phase one. The team is focusing on the design and testing of the CubeSat. This is estimated to take about a year to complete.

"You do a project like this in slow, careful stages," Katz said.

A big part of phase one is trying to prepare for any possible scenarios. Big initial problems that the team foresees are maintaining communication with the satellite after its launch and fixing it remotely. The extreme temperatures and radiation in space is proving to be a tough problem to work around.

"Batteries don't like to work below zero degrees Celsius, and they blow up when they get too hot," said student team member William Fisher.

The team is also concerned with creating a software for the CubeSat and keeping it updated while in orbit. They are also worried about the issue of fixing corrupted software if the satellite comes in contact with too much radiation. This problem recently occurred with NASA's Curiosity Rover on Mars.

"Software is the glue: it keeps everything together," explained team member Kevork Sepeteci.

In order to communicate with the CubeSat, the team is also building an automated ground station on top of Jacaranda Hall. The system is going to be using old equipment from a previous experiment.

"There's a lot of problems with the ground station right now, it's old equipment," said member Rufus Simon. "We're fixing it! Step by step."

The station will not only help the team track CSUN's CubeSat, but other satellites as well. It will become part of the Global Educational Network for Satellite Operations (GENSO), which is a community of universities across



PHOTO COURTESY OF SHARLENE KATZ

The student team (back row), the three faculty advisors (front row, right to left) Professors Sharlene Katz, David Schwartz and James Flynn worked to create the CubeSat satellite, which sits on the table.

the world who track and communicate with satellites.

"Sometimes the satellite is only observable in your area for a little amount of time, but it helps if other people in different places are able to track it," said Steven Parks, a student member.

The CubeSat project is available to universities across the country, and is an opportunity to test experiments out in space. The CSUN satellite is going to test alternative power techniques for satellites and spacecrafts.

"We're (in) the trial run to see if this structure is right for experiments," Parks said. "It has limitations because of its lack of space, but it can be developed quicker."

The designs are being worked on by students and engineers from JPL. The experience provides a unique opportunity for them to network with professionals in their field, and looks good to future employers.

"They're happy we're

getting our hands dirty with today's technology," member Andy Kurum said.

Phase two is set to start during the fall semester, and the team is hoping to complete the satellite by December 2014. Of course, the project doesn't end with the CubeSat's launch.

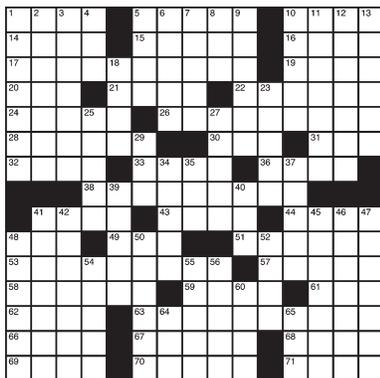
The team will be actively monitoring their experiment and tracking the position of the satellite. Follow-up experiments will depend on the condition of the CubeSat.

Los Angeles Times Daily Crossword Puzzle

Edited by Rich Norris and Joyce Lewis

ACROSS

- 1 Soccer officials
- 5 "You... dead!"
- 6 "I'm telling mom!"
- 10 Location
- 14 Berry in healthy smoothies
- 15 "No way!"
- 16 Jazz classic
- 17 "Take... Train"
- 18 Lost color in one's cheeks
- 19 Greasy spoon grub
- 20 Hit hard
- 21 Like blue hair
- 22 "Faut" dramatist
- 24 Fred's dancing sister
- 26 Bartender's twist
- 28 Beer to drink on Cinco de Mayo
- 30 Four quarters
- 31 Tax agency
- 32 Archaic "once"
- 33 Talk show pioneer Jack
- 36 Residential bldg. units
- 38 Stack of unsolicited manuscripts
- 41 Bush secretary of labor Elaine
- 43 Madeline of "Blazing Saddles"
- 44 Emails the wrong person, say
- 48 U.S./Canada's ___ Canals
- 49 Sunrise direction, in Köln
- 51 Buyer's "beware"
- 53 Tribal carving
- 57 Go
- 58 City on the Rio Grande
- 59 Feed the kitty
- 61 "Coif" monetary amt.
- 62 Even-handed
- 63 It may be filled with a garden hose
- 66 Helsinki resident
- 67 Actress Burslyn
- 68 Hip-swiveling dance
- 69 Vexes
- 70 Extremely poor
- 71 Ruin Bond's martini



By C.C. Burnikel

4/16/13

Monday's Puzzle Solved



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- 1 Daily grind
- 2 Besides Chile, the only South American country that doesn't border Brazil
- 3 ___ market
- 4 Break a Commandment
- 5 "Toy Story" boy
- 6 Fend off
- 7 Dance around
- 8 Somme salt
- 9 Where Nike headquarters is
- 10 Considerable, as discounts
- 11 Terse critical appraisal
- 12 Ties to a post, as a horse
- 13 Art gallery prop
- 18 Delightful spot
- 23 "Paper Moon" Oscar winner
- 24 Tatum
- 25 Many, informally
- 27 Change from vampire to bat, say
- 29 Kwik-E-Mart owner on "The Simpsons"
- 34 Extend an invitation for
- 35 "I knew it!"
- 37 Thorn in one's side
- 39 Appears strikingly on the horizon
- 40 Co. letterhead abor.
- 41 Welcome summer forecast
- 42 Noticeable lipstick color
- 45 Come down hard on
- 46 Filled pasta
- 47 Top-notch
- 48 Golden Slam winner Graf
- 50 Said
- 52 Away from the wind
- 54 Takes home
- 55 Punch bowl spoon
- 56 Over and done
- 60 Hard to see
- 64 French landmass
- 65 Acidity nos.

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Solution to today's sudoku

2	9	1	6	8	3	7	4	5
5	3	7	4	1	9	8	6	2
9	8	4	4	6	5	2	7	3
4	7	4	7	3	1	3	7	8
6	2	8	2	6	9	5	3	1
8	1	3	2	3	2	3	6	5
1	6	5	8	4	7	9	8	4
3	2	2	2	8	4	7	5	6
5	4	9	4	8	3	8	3	5
7	1	6	7	1	6	7	1	7

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7		9	5	2				
		3				1		
			4	5	6			
		9	8		6			
		5	7	8				
		2		1	3			
	1	7	5					
	9			4				
	4	7	8		2			

sudoku

How to play:
Fill in the grid so that every row, every column, and every 3x3 box contains the digits 1 through 9.

Solution above.