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MARION CHRONICLE-TRIBUNE / WWW.CHRONICLE-TRIBUNE.COM / THURSDAY, OCTOBER 17, 2013

Taylor teams up with NASA

Engineering students build nanosatellite to orbit Earth

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A little piece of Taylor University will begin orbiting the Earth this spring after the engineering program won a top place in a NASA competition.

The fifth edition of the Education Launch of Nanosatellite (ELaNa) program features four nanosatellites built by educational institutions from across the country. Along with the Ames Research Laboratory, the Colorado Space Grant Consortium and Cornell University, Taylor University will be represented with a small piece of space hardware set to be delivered to NASA.

The nanosatellite, called the TSat for Taylor satellite, was designed and built by engineering students as part of a senior capstone class. Taylor University has competed in the ELaNa program in past years and senior engineering student Adam Killmer believes that the continued success on a national stage is improving Taylor University's academic image.

"Some schools that are competing are Boston University, California Tech — a lot of top schools in engineering," Killmer said. "If Taylor keeps participating in the program, not even considering winning, I can see a lot of growth for our engineering program in general. It gets a lot of recognition and distinction to say that Taylor is a school that does engineering, and apparently does it well enough to keep up with the big boys."

Killmer said a typical college program satellite is built in two years for about \$10,000. The funds for the project come from grants provided by the Air Force or by NASA. In comparison, a professionally built satellite can cost about \$10 million and take much longer to build. "The shorter development period for the college program requires a much quicker turnaround from the design stage to practical use."

Hank Voss, a professor of physics and engineering who is overseeing the project, said he puts a lot of value in the developmental stage as an educational benefit for the students involved.

"That part of the education is really excellent," Voss said. "Where they can meet



WORKING ON SATELLITE — Blake Williams (left), Tom Sargent (middle) and Joe Emison work on a satellite that will be sent into space next year. They're in the clean room, which means they must wear protective white coats to keep the area sterile. Make this image yours. Go to www.chronicle-tribune.com.

JILLIAN FELLOWS / Chronicle-Tribune

with real engineers and present their ideas and have real professionals critique their plans; that's a really great experience. When you see them interacting with members of the scientific community, that's when they learn, get inspired and really understand what they're doing."

The TSat has a threefold objective list: educational, scientific and technological. Once in orbit, the satellite will test a new communications system called Global Star Connections that will allow communication anywhere in the world at anytime, not just when the satellite is overhead of a receiving station. TSat will also conduct a number of experiments.

"They're sending the rocket to the space station and the nanosatellite gets kicked off on the way there," said Kate Yoshino, a junior who is the project manager for the capstone class. "Once it is in orbit, we have several science instruments that will be taking data for us and sending it back down. Our mission is to explore that region of space."

TSat is not expected to last long in orbit. Yoshino said the satellite will probably burn up in the atmosphere after a few months.

"We won't have the satellite but we'll have the data," she said.

The nanosatellite was scheduled to be launched on Feb. 11, but because of the government shutdown, that date has been altered.

"It will probably be pushed back several weeks," Voss said. "But we can't do anything about that."

The class of engineering students is already working to build another nanosatellite, the ELEO (Extremely Low Earth Orbit) satellite for an Air Force competition. ELEO is designed to conduct research while orbiting as low to Earth as possible.

Voss said Taylor University is one of 10 schools participating in the competition. The project is being funded by a \$110,000 grant from the Air Force.

"The hands-on experience of designing and building functional satellites is an invaluable and entertaining education," Yoshino said.

"It's a really cool opportunity to see the things we're capable of doing," she said. "It's a great opportunity to learn outside the classroom; it's very project based."

Killmer agreed with the benefits of a practical learn-

ing environment and said participating in the ELaNa program has changed how he views his overall education.

"It's very easy for me, as an engineer, to think of the quality of an engineering program being determined by books or classes or the prestige of the college, but I'm now beginning to think the value lies with the experience gained," he said.