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SPACE EDUCATION AND OUTREACH SYMPOSIUM (E1)
Enabling the Future - Developing the Space Workforce (5)

Author: Mr. Bruce Davis
Colorado Center for Astrodynamics Research, University of Colorado, United States

THE US UNIVERSITY NANOSAT PROGRAM, ENABLING SPACECRAFT EDUCATION THROUGH NATIONWIDE COMPETITION

Abstract

The University Nanosat Program is a competition based endeavor aimed at training students in spacecraft research and development. Organized and funded by the United States Air Force Research Lab, this program recently commenced its seventh iteration cycle which challenges students at United States institutions to design and build a mission of a 50kg class spacecraft over the course of two years. The program has gained increasing support since its founding with an average of thirty institutions applying each cycle. The winning university is selected based on a series of intensive reviews by industry experts and is awarded the coveted prize of a launch opportunity as a secondary payload and funding to support integration services. Since its inception, this program has seen the launch of several spacecraft and has impacted over 4500 college students from dozens of institutions which are well dispersed throughout the country.

This paper profiles the winners of the University Nanosat 3 & 5 iteration cycles: The University of Texas at Austin and the University of Colorado at Boulder. The first spacecraft launched in November of 2010 with the latter preparing for launch in the late 2012 timeframe. This paper discusses how the University Nanosat program has evolved to embody standardized design requirements which set the scale and scope of the missions enabling students to set realistic expectations from the beginning of the project. As a result, students build their spacecraft to an industry accepted level of sophistication which eliminates risk and facilitates integration with the launch vehicle providers. In addition, project managers have found that winners of the program are the ones who successfully incorporate professional mentorships into the design process. This collaboration with local industry provides a win-win scenario for both parties. The industry members are able to buy-in to a unique, open-ended engineering project while the students gain expertise and real-world experience as they collaborate with professionals. The University Nanosat Program is a stellar example of a relatively low-cost program which enables young minds to gain direct experience within the spacecraft industry and the rare opportunity to launch an operational payload. The successful aspects of this concept can be used around the world to launch spinoff programs within other space industries, with the goal to train the future space exploration workforce.