The Texas A&M Small Satellite Program : AggieSat Lab

Helen L. Reed, helen.reed@tamu.edu
Joseph A. Perez, joe_perez@tamu.edu

Established in 2005, AggieSat Lab is currently providing students and faculty with two major satellite missions:

- AggieSat2 – NASA Johnson Space Center/University of Texas at Austin, 8-year campaign to demonstrate autonomous rendezvous & docking technologies. 4 missions – 1st mission (DragonSat) on STS.
- AggieSat3 – AFOSR/AFRL/AIAA University Nanosat V. Close-proximity tracking, debris detector, GPS, responsive space mission software and hardware architectures.

Prior to joining Texas A&M in 2004, the first author had already guided over 700 students to launch two satellite missions:

- ASUSat1 – 13-pound nanosatellite on the inaugural Orbital Sciences "Minotaur" mission out of Vandenberg AFB in January 2000.
- Three Corner Sat – Satellite constellation on the Delta IV Heavy Demo mission out of Cape Canaveral in December 2004. 2 of 3 satellites launched; 3rd in Air & Space Museum.

At Texas A&M, students of all experience levels (freshman through PhD) and from 18 different majors (from engineering to business to science and mathematics to liberal arts) have thus far participated. In an effort to develop human resources, AggieSat Lab has implemented a multidisciplinary Junior Engineer / Senior Engineer Certificate Program, whose goal is to expose students to spacecraft engineering, systems engineering, communication, management, and leadership. Moreover, the Lab has developed a baseline strategy and concept for reusable, expandable, and responsive command and data handling in future satellites that is attractive for building on previous missions as well as implementing the research of other faculty and our partners. Facilities (both in-place and planned) include the Space Systems Integration and Testing Lab; Design, Prototyping, and Integrated Concurrent Engineering Lab; and Proximity Operations Laboratory.