ALDRIN FAMILY FOUNDATION

**At the Aldrin Family Foundation (AFF), we believe space inspires. When you couple powerful STEAM-based educational tools against the fascinating backdrop of space, you set the stage for unleashing immense creativity and passion in our next generation of explorers. Here's the chance for your district to take a giant leap with us via our Student Satellites in Space Program, or S-Cubed, which brings CubeSats into the classroom.**

# SPACE WITHIN YOUR REACH

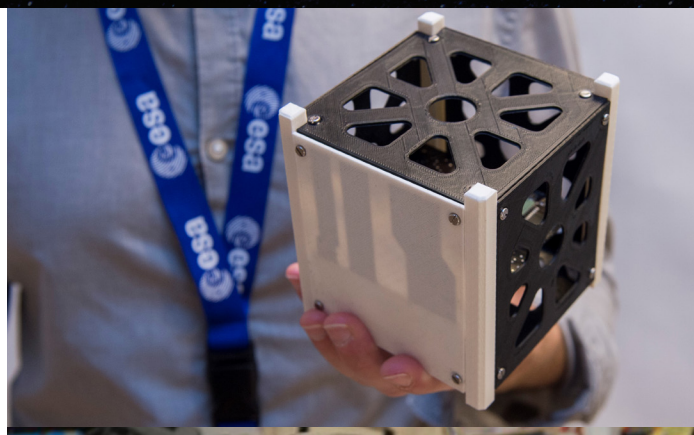
## STUDENT-DESIGNED SATELLITES

A CubeSat is a class of miniature satellites (a.k.a. nanosatellites) that have a standardized size and weight – usually 100mm x 100mm x 100mm and weighing 1.333kg. Their unique cube-like structure allows them to be single units or stacked on top of each other. Even better, they can be designed and built using commercial off-the-shelf parts, and launch opportunities are easy to find. All these factors make CubeSats a perfect means for giving schools and universities cost-effective and easy access to space.

Schools launching CubeSats isn't new, but they're often done as one-off projects. A critical piece of the puzzle has been missing … until now.

## COUPLING CUBESATS WITH CURRICULUM

For most people, space has traditionally been about observation – watching impacts and successes of others from afar. But, through AFF's S-Cubed Program, we're putting students into the driver's seat and injecting space directly into the high school classroom. The S-Cubed Program content ties in with multiple areas of study that can be used across a wide range of classes, all while perfectly aligning to state and national standards.




**Let's work together to create an inspirational, educational adventure that will ignite students' passions, but also hopefully shape the trajectory of their lives and grow tomorrow's STEAM-based workforce.**

**For more information contact us at Jim.Christensen@AldrinFoundation.org**

**OVER THE COURSE OF A MULTI-YEAR PROGRAM, WE COUPLE CUBESAT PROJECTS WITH CUSTOMIZED CURRICULUM TO OFFER YOUR STUDENTS A COMPREHENSIVE, INTERACTIVE, OUT-OF-THIS-WORLD LEARNING EXPERIENCE:**

## YEAR 1 – DEVELOPING SKILLS, DESIGNING AND TESTING A SATELLITE PROTOTYPE

1. Students learn how to operate "robots" in space. Working with hardware models that emulate how real spacecraft subsystems behave in space, students learn how to take sensor data, keep precise timing, collect solar energy, determine environment and position, and communicate via radios.

2. Students construct their own CubeSat prototype, learning valuable hands-on skills and an intuitive feel for how satellites function inside and out.

3. Students prepare a payload for their CubeSat prototype and design all aspects of a high-altitude, weather-balloon mission. This includes modeling the flight plan, collecting desired data, selecting date and flight conditions, and more. Industry experts work with students to discuss the pros and cons of their proposed ideas and help them refine their vision. Following a flight that travels to the edge of space, the CubeSat prototypes parachute back to Earth, where students collect and analyze data.

## YEAR 2 – DESIGNING, CONSTRUCTING AND TESTING A FLIGHT-READY CUBESAT

1. Students focus on systems-level engineering as they design an actual CubeSat and mission payload. Outside experts provide engineering support by reviewing students' work, offering counsel, and ensuring the safety and operation of the final system. Teachers receive guidance to feel more comfortable leading their students through this phase.

2. Students hone their oral and written communications skills as they present their final spacecraft designs to an expert panel. They discover how their parts can be constructed, purchased or modified. From there, the building phase begins.

3. AFF works with the district to identify local and regional resources to test the functionality of the students' CubeSats (i.e., physical connections, software, communications, etc.) prior to launch.

4. The CubeSats are ready for launch. AFF conducts mission and operations readiness reviews to educate students on any missing elements and walking them through next steps.

## A JOINT MISSION

AFF partners with you throughout every phase of this multi-year program. You can count us on to:

- Support tabletop satellites with FCC-compliant hardware/software
- Deliver standard curriculum to teach early program concepts, followed by customized curriculum later in the program based on your desired course of study
- Offer industry experts to evaluate and counsel on student design
- Coordinate all regulatory paperwork (i.e., NOAA and FCC licensing, coordination with air traffic control, etc.), secure testing facilities, procure competitive launch proposals, and oversee launch vehicle interfacing and other logistics. Note: This work is transparent, offering instructors and administrators to observe the process so they can apply it to other unrelated courses in the future. Secure outside grant and commercial support for the launch to minimize costs to the district.
- Conduct advanced teacher professional development sessions to prepare educators for the program. This includes hands-on classroom activities, review of the engineering design cycle, and access to educational materials.
- Manage entire program; help recruit program advisor