

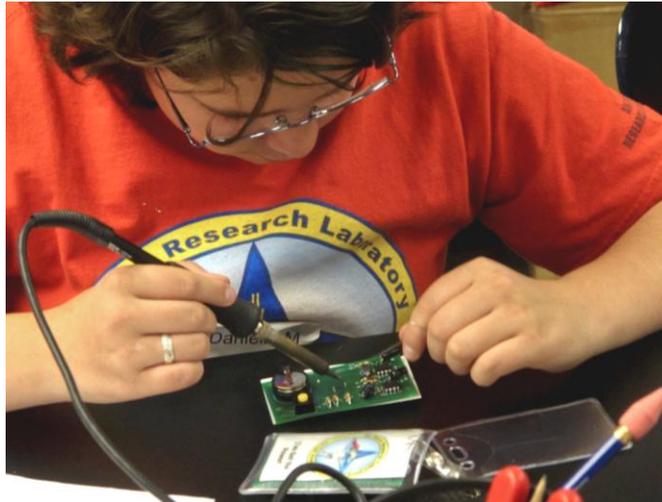


FACT SHEET

UNITED STATES AIR FORCE

Air Force Research Laboratory, Office of Public Affairs, 3550 Aberdeen Avenue S.E., Kirtland AFB, NM 87117-5776
(505) 846-1911; Fax (505) 846-0423

AFRL La Luz Academy TECH Flight



AFRL La Luz Academy's Technology and Engineering Challenges (TECH) Flight, for sixth and seventh grade middle school students, consists of three non-consecutive days of instruction, in either the fall or spring semesters. The hands-on curriculum uses science, technology, engineering, and math (STEM) research topics related to the Air Force Research Laboratory's Directed Energy and Space Vehicles Directorates as a springboard for student investigation. The curriculum also incorporates teamwork and the Air Force Core Values (*Integrity First, Service Before Self, and Excellence in All We Do*).

Rockets

The fall semester TECH Flight focuses on rocketry over the course of three non-consecutive days, during which students engage in a variety of STEM-related hands-on activities. They use teamwork and engineering design skills to build six-foot rockets using components such as *booster tubes, bulkhead plates, centering rings, payload tubes, couplers, fins, fin wraps, and nose cones*. Students also run a computer simulation of the anticipated flight of the rocket using *RockSim* software to predict what the rocket would do when flown. Students explore hands-on Global Positioning Satellite (GPS) activities similar to what they will do on Rocket Launch Day.

On launch day, students are assigned to one of the following duties: *Assembly and Inspection Team, Meteorologist, Spotter Team, Recovery Team, Pad Manager, Range Safety Officer, and Launch Control Officer*. With the help of scientists and engineers acting as volunteer mentors, the Assembly and Inspection Team installs a parachute, altimeter (to track how high the rocket goes), and the motor; the Meteorologist verifies that weather conditions are acceptable for launch; the Pad Manager helps load the rocket onto the launch rail; the Range Safety Officer verifies that all conditions are acceptable for launch and gives the countdown; the

- MORE -

Launch Control Officer launches the rocket; and the Spotter and Recovery teams coordinate to locate and retrieve it.

Each rocket flies with an altimeter to capture altitude information, and data regarding the range of the rocket is collected by the Recovery Team using GPS units. After the launch, students analyze the data collected from the actual launch, compare it to the data from their RockSim simulation, and explore additional connections between rocketry and other STEM concepts.

Satellites

The spring semester TECH Flight focuses on satellites over the course of three non-consecutive days, during which students engage in a variety of STEM-related hands-on activities, including waves, the electromagnetic spectrum, electricity, electronic components, gyroscope technology, and space weather.

Students explore wave movement with spring coils and use light boxes, lasers, and gelatin lenses to learn about visible light and color. Light-sensitive frisbees and sunscreen are used to investigate ultraviolet light. Students create an ultraviolet detector using color-changing beads. Students explore electricity with hands-on activities such as building series and parallel circuits, and soldering a flashing light-emitting diode (LED) badge.

Three types of gyroscopes provide experiences with “attitude control” related to satellite systems. Students experiment with basic gyroscopes and gyroscopes in tubes, and then become part of a gyroscopic system that involves a rotating chair and a bicycle tire.

To explore space weather and how it impacts satellite function, students experiment with magnets and relate their observations to sunspots and the Earth’s magnetic field. They also observe the sun with a solar telescope, and then graph sunspot activity and satellite function. A Van de Graaff generator is used to help students understand solar wind.

For more information, contact AFRL La Luz Academy at (505) 846-8042
or go to: www.vs.afrl.af.mil/LaLuz.

(Current as of August 2011)