Bland Sci-Tec Academy 2019-2020

Program Description

The Bland Sci-Tec Academy provides opportunities for BCHS students to learn complex STEM concepts and skills in real-world situations. The program is career focused and personalized for specific student and community interests. Sci-Tec STEM learning enhances high school science, technology, engineering, and math curricula and is embedded within courses. Some activities are conducted outside of the regular school day. The Sci-Tec Academy's investigations are offered to all interested 7-12th grade BCHS students.

The Bland Sci-Tec Academy involves:

- Solving real-world problems in which students learn and model complex Science, Technology, Engineering and Math concepts and skills
- Connections to specific job-related skills with the guidance of local industry professionals as well as that of national and international specialists
- Interdisciplinary teams of teachers brought together based on learning objectives and problem solving
- A collaborative, quantitative approach to problem-solving that can be applied across all disciplines
- Using local environmental health as an organizing principle for place-based STEM investigations

Bland Sci-Tec Academy students can be involved in any one or all of the three types of environmental health modules within the same school year, as well as participating in our robotics teams. Environmental investigation modules are; Surface, Sky, and Space. Together these three standards-based modules give a more in depth, real-world view of our local environmental quality. The Sci-Tec Robotics Teams will dive deep into the world of robotics, engineering and coding. They also will be involved in regional robotics challenges.

Module 1. Surface
Students conduct "on the ground" surface tests for detection of environmental health issues regarding soil, and water at specific sites in Bland County. This module is embedded within the BCHS Biology course. NASA Global Learning and Observations to Benefit the Environment (GLOBE) protocols are used to conduct the investigations. Data is shared locally, regionally, nationally, and internationally through the GLOBE website, www.globe.gov and our Bland Sci-Tec Academy website www.scitec.net.

Module 2. Sky
Students will construct, program, and fly drones. These drones will be used to carry sensors that detect environmental changes in air quality of our local area at specific test sites. This information is useful to the community for detection of agricultural and ecological changes in the local environment. The Sci-Tec Sky Module is embedded within the BCHS Agriculture course and the Geology curriculum. The Sci-Tec drone educational program prepares students with the knowledge and skills to take drone pilot practice tests for possible licensing

Module 3. Space

This program module allows participants to have access to relevant STEM expertise, and gain knowledge and skills of engineering while building and testing satellite components. Students design, build, code, test, and operate various satellite engineering modules to collect sensor data at different altitudes moving increasingly further away from the Earth's surface. Each year, the student's newest ThinSat Satellite, will be released into space aboard a NASA rocket and will transmit data for five days as it orbits the Earth. This Sci-Tec Space program is conducted within and outside of the school day. ThinSat Team members work separately from school courses, but data received from team member's sensors and satellites are used in the BCHS statistics course for data analysis. Students also collaborate with Virginia Space and NASA experts to evaluate the data.

This Sci-Tec ThinSat component is sponsored by Virginia Space, and the Mid-Atlantic Regional Spaceport in partnership with NASA Wallops Island, Twiggs Space Lab, and Northrop Grumman. More information can be found at   www.vaspace.org/index.php/thinsat-program

Sci-Tec Robotics

In the 2019-2020 school year, Sci-Tec Robotics Teams(7-12th grade) will be involved in complex engineering and coding as they design, build, program, and operate their robots. As part of a Tech Team Challenge, they will demonstrate their knowledge and skills as they compete in regional floor games in an alliance format. More information about the robotics competition program can be found at: www.firstinspires.org/robotics/ftc

Additional information:

In the 2018- 2019 school year, there were 101 students participating in the Bland Sci-Tec Academy. On April 17, 2019, an Antares Rocket from NASA Wallops Island released our student's Bland ThinSat I Satellite into orbit. It successfully collected data from space! The data is posted at www.sci-tec.net. It is currently being evaluated by Virginia Space, NASA and Twigg's Space Lab.

The Sci-Tec ThinSat Team is currently building and testing sensors to complete the next ThinSat satellite named Bland ThinSat II.

Sponsors

The Bland Sci-Tec Academy is funded by the Wythe-Bland Foundation. Other sponsors include Bland Quill Foundation, Virginia Space, NASA, Twigg's Space Lab, and Northrop Grumman.