

Friday, July 10, 2009

## SSCC physics classes

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Contributed photo Southern State students examine projectiles in the Utron machine shop. Pictured left to right are Josh Otworth, Dr. Russell Kincaid, Mindy Waits, Brittany Vandervort and Bill Jacobs.



Contributed photo Jordan Zile, Tyler Addington and Bill Jacobs test projectile weights.

on display not only in a laboratory, but in a device being developed for battlefields. It opens up ideas for different future employment than they even knew existed before the visit," Kincaid said.

Bill Jacobs, a student who has retired after years of military service, was impressed. "All the things we have talked about in class, they were all there in one facility. The Utron scientists and engineers have taken physics and used it to make our soldiers safer."

Dr. Kincaid and his students, Josh Otworth, Tyler Addington, Jordan Zile, Bill Jacobs, Brittany Vandervort and Mindy Waits, made the trip with the help of Southern State Community College's staff, including Jon Davidson, Ryan McCall, Nicole Roades and others.

The college provided a van for the trip.

During the course of the 2008-09 academic year, Southern State's physics classes studied topics including thermodynamics, mechanics, optics and electronics.

Late in the recently concluded spring semester, the students had the opportunity to visit a place where all these physics topics which they had studied were being used in real life situations. The students, along with Dr. Russell W. Kincaid, physics professor, visited a branch of Utron Inc., located near Ashton, W.Va.

Utron is a small business with nearly a 20-year history of working with the defense department. Over the course of time, Utron has developed a wide variety of technologies including an innovative new design for a large caliber weapon for the military.

From a core technology that includes expertise in pulsed power and particularly with pulsed plasmas, Utron has developed a variety of cutting edge technologies. Other technologies have involved ultra-fast closing electrical switches, a method of compacting metal powders more effectively than existing techniques, a method for producing spherical fine metal powders, advanced thermal spraying devices and many more. Their technologies require an integration of all the different aspects of physics which the students have studied during the year.

The West Virginia facility serves as a test firing station for Utron's newly developed combustion light gas gun, which is currently in its final stages of development. This weapon system is capable of providing fire support to troops at distances over 10 times longer than existing battlefield technologies. In order to be able to test such a device, the facility maintains appropriate electronics to record data, computer systems to provide control of the system, a machine shop to produce replacement components and projectiles, and cryogenic systems which use liquid gases in order to feed propellant into the device.

In addition to these on-site facilities, years of engineering has gone into the development of the entire facility. Each of these areas requires understanding of different areas of physics in order to design, fabricate and maintain such a device which functions with such a high level of technology integration.

Dr. Kincaid is a former employee of Utron. As a result, he planned the tour for his students. "I feel that seeing such a facility is as important as many of the things that students can learn in a classroom," said Kincaid. "Many of these physics students are taking this class either early in their collegiate careers or while still in high school. They do not really know what they want to be yet, and visiting such a facility gives them a clear indication that there really are jobs in the sciences that go beyond teaching."

It was an eye-opening experience for the students, who have never before been exposed to a research and development facility. "Students are able to see many of the topics we have studied