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AFTAC experts educate students at STEMiversity

By Susan A. Romano, AFTAC Public Affairs

PATRICK AIR FORCE BASE, Fla. – A trio of highly skilled technicians from the Air Force Technical Applications Center here traveled to Milledgeville, Ga., June 22-23 to educate and mentor area high school students.

Aptly called ‘STEMiversity,’ the summer program focuses on science, technology, engineering and math (STEM) and gives underrepresented middle and high school youth an opportunity to conduct experiments and use precision instruments in real-life laboratories.



Maj. Allen Cohen, a mathematician, Master Sgt. Chad Taguba, a physicist, and Diana Velosa, a chemist, all members of AFTAC, made the trip from Patrick AFB to the Wilkes Building on the campus of Central State Hospital, a stone’s throw from Georgia College and State University near Macon. The Air Force awarded AFTAC \$10,000 to help fund student attendance and pay for associated costs.

Rose Day, AFTAC’s human resources program manager, conducted extensive research to find the best way and most meaningful program to appropriately expend the grant monies.

“As the diversity and inclusion program manager for my organization, I wanted to find a STEM-focused diversity outreach program relevant to the work we do here at AFTAC,” said Day. “I found STEMiversity through contacts we made at career fairs and technical conferences we attended when we were recruiting for our new Ciambone Radiochemistry Laboratory.”

She added, “AFTAC scientists use analytical chemistry and mass spectrometry in support of our nuclear treaty monitoring mission. STEMiversity’s forensic chemistry summer camp curriculum includes analytical chemistry and sample analysis using gas chromatography-mass spectrometry. This unique program provides more hands-on experience over a two week period than most college students received in a four-year bachelor’s program.”

This year’s students learned about analytical chemistry, drug forensics and how to properly operate professional instrumentation – most of which are usually reserved for upper-level college students.

A typical day at STEMiversity starts with classroom instruction. Mentors give oral presentations about the experiments the students will be working on, and go over safety procedures, observation reporting and report preparation. A question-and-answer session is then conducted, similar to a college lecture seminar. Once the Q&A is complete, the students are broken up into smaller groups with two to three mentors to oversee the experiments and lab work while the students get to perform their hands-on activities.

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2-2-2 STEM

The 2015 teams, “Platinum Squad” and “Neon Nerds,” processed crime scenes, conducted drug field tests, documented evidence, prepared samples for analysis, drafted comparative analysis data reports, and defending their findings at a mock trial. AFTAC also invited guest speakers from Warner-Robbins AFB’s Workforce Development Branch and Airmen from the 336th Recruiting Squadron.

“Students were actively engaged and amazed during our Air Force presentations,” said Day. “The room erupted with laughter when Sergeant Taguba closed his presentation by saying, ‘Remember, kids – nerds rule the world!’”

“It was a privilege for me to be a part of this program,” said Taguba. “I jump at any opportunity to reach out to the youth of today and get them excited about science and technology. If we want to remain competitive in a world where technology rules, we have to have the best and the brightest competing for those coveted jobs.”



One of the primary goals of the Air Force Tactical Outreach Funding Program is to educate youth on STEM opportunities and potentially inspire them to pursue Air Force careers.

“I believe we accomplished that,” Day said.

AFTAC’s involvement with STEMiversity directly supports current Air Force diversity and inclusion initiatives outlined in the service’s Diversity Strategic Roadmap – an action plan developed by Headquarters Air Force’s Global Diversity Division at the Pentagon to provide guidance to Airmen on how to enhance institutional diversity in the Air Force and track its progress and success.

“This program offers an incredible opportunity for many middle and high school students to delve into real-world scientific problems they otherwise might never experience,” said Cohen. “I was encouraged to watch these young adults apply some of the same analytical processes we use here at AFTAC, and to see them truly excited about the things they were learning. The mentors, teachers and volunteers behind STEMiversity are incredibly inspiring, highlighting the national need to continue promoting STEM fields to future generations.”

Velosa, who participated in the program for the first time in her career, thought the summer camp was extremely beneficial, not just to the students, but to her as a scientist as well.

“I had a discussion with the students while they demonstrated the operation of the gas chromatography-mass spectrometer, which was used to analyze the content of unknown samples from their mock up crime scene,” said Velosa. “I was very impressed by their enthusiasm and scientific curiosity. STEMiversity has been able to open a new door to a field that’s often feared by middle and high school students. These kids were very comfortable working in the laboratory set-up and were eager to learn and participate in all activities.”

STEMiversity personnel and mentors were also impressed by the Air Force presentations.

“The work you do at AFTAC is incredible and extremely exciting,” said Ella L. Davis, vice president of STEMiversity. “My only regret is that I am 30 years too late! I wish I knew about your mission when I was starting out. I would have loved to have been a part of it.”

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3-3-3 STEM

AFTAC, the Department of Defense's sole nuclear treaty monitoring center, has been looking for ways to diversify its workforce, championing multiple programs and initiatives to emphasize the importance of STEM career fields.

“As a very technical organization, we need to attract and recruit highly skilled and educated people,” said Col. Jennifer Sovada, AFTAC commander. “Diversity brings different experiences, cultures and perspectives to the forefront. STEMiversity is a perfect way to lay the groundwork and foundation for these young men and women to motivate them towards careers in the STEM fields.”

Day hopes to have AFTAC members participate in STEMiversity every year.

