

New Science Center Helps Cadets Reach for the Stars

by Dr. JoAnne Castagna



*Cadets working on experiments in a new lab in an area of the science center where renovation has been completed.
Credit: JoAnne Castagna, Public Affairs, U.S. Army Corps of Engineers, New York District.*

In the late 1960s, young Shane gazed at his TV screen in awe as he watched astronauts walking on the moon. It was at that time that he set his sights on becoming one of them. Today, Colonel Robert “Shane” Kimbrough, a National Aeronautics and Space Administration (NASA) astronaut and active duty Army Colonel looks back and believes that the science education he received at the U.S. Military Academy at West Point, New York helped him to reach his dreams.

The academy’s science education is about to get even better. The U.S. Army Corps of Engineers, New York District is constructing a new science center for the cadets at the academy that is maintaining the look of the historic 200-year-old campus and taking their science education well into the 21st century.

The academy is known as one of the world’s preeminent leader development institutions and has graduated a number of famous individuals, including two Presidents of the United States, numerous famous generals, seventy-four Medal of Honor recipients, and many successful NASA astronauts, like Kimbrough, who graduated from West Point in 1989.

“The science education I received piqued my interest and made me want to do things I normally didn’t think of doing. It also was a huge foundation for me becoming an astronaut. The academy provided me an incredible physics, chemistry and biology education and skills in problem solving and experimentation techniques, all of which are invaluable skills I need as an army officer and NASA astronaut. At NASA, obviously science is hugely important. We

have to be able to launch a vehicle and people into space, space walk, perform work in orbit and get the crew back home safely. All of this is science and math. I had a great background at West Point so it helped me to understand all of this better than most folks,” said Kimbrough, who has flown on the shuttle and performed several spacewalks.

Kimbrough is excited about the new science center being constructed by the Army Corps and says the cadets will be even more prepared for what the future brings.

The Army Corps’ New York District has performed a number of construction projects for the academy over the years and was asked to construct a new science center.

Their old science building and equipment were getting outdated, and they want to stay competitive

with other educational institutions of the same caliber.

The Army Corps is constructing the new science center by renovating and combining two existing buildings: the academy's old science building, Bartlett Hall, that was originally constructed in 1913, and the academy's nearby old library.

Since the campus is a national historic landmark and home to many historic sites, buildings and monuments, the Army Corps was asked to perform the work by keeping the gray and black granite shells of both Neo-Gothic buildings intact.

They are doing this by gutting and renovating the interiors of both buildings and connected them to create one large science center.



Astronaut Robert S. (Shane) Kimbrough, mission specialist and alumnus of the USMA of West Point. Credit: NASA.

When completed, the new science center will be an expanded and modernized multi-purpose science facility that will sit on 300,000 square feet of property. The complex will have larger classrooms and labs and new equipment for the cadets to study physics, optics, laser technology, chemistry, life sciences, biology and biochemistry.

The Army Corps is working in collaboration with the academy to make renovations that will improve the science education for the cadets and accommodate the needs of the faculty.

These improvements include constructing larger labs with more state-of-the-art equipment to accommodate the 4,400 cadets that are all required to take chemistry and physics.

"At West Point, we encourage the cadets to perform hands-on science experiments, and this building's new design is helping us expand on this. The Army Corps is taking this opportunity to rethink how the science needs to be taught," said COL. John Graham, Associate Dean for Research and Chief Scientist, U.S. Military Academy at West Point.

"Instead of having five or 10 cadets doing the same experiment, two are now doing it. This is amazing. Whenever you do science in a large group, obviously someone always gets left behind in the group, but when there are two, they both can play an active role in the work. We are revolutionizing how we do science here."

Graham, who is a West Point graduate, added: "We used to have limitations on what scientific experiments are cadets could do because it wasn't safe. Now they can do them. Our faculty is very excited. For example, piping was placed strategically so that the cadets can move fluids around during chemistry experiments and outlets were located to better facilitate the use of the computers in the labs."

The cadets are already benefiting by the Army Corps' work. They are performing the renovating in one area of the construction site while classes are safely taking place in another area of the site. This allows the cadets to get their courses completed without any delay due to the construction.

The Army Corps may be modernizing the academy's science education, but they are maintaining the historic look and feel of the campus. They are doing this by preserving the building's granite exteriors with their old glazed, leaded glass-paned windows.

They are also preserving other historic elements of the buildings including some of the interior stone walls, marble, slate from wrought iron railings and tile flooring, as well as a staircase and ceiling archways.

"The goal for historic integrity is not to try to copy or mimic. It's to try to blend in and replicate and make it look new but still take on some of the details of the old architecture," said Jeffery Friese, Senior Project Engineer, U.S. Army Corps of Engineers, New York District.

Doing this is not easy, said Friese. "It's very challenging to just gut the interior and leave the exterior. This is especially so when you have limited access to the building because there is limited space around the building, limited areas to get in and out of the building and when there is an occupied building next door. This is a very congested area of the post."

Another challenge for the engineers is the wiring. "When you turn a library into a science building, there



Cadets at the USMA at West Point. Credit: JoAnne Castagna, Public Affairs, U.S. Army Corps of Engineers, New York District.

is just no ceiling space for all of the wiring,” said Timothy Cain, Contracting Office Representative, U.S. Army Corps of Engineers, New York District.

“It’s a challenge to coordinate and organize all of the wiring, science lab items, utilities and plumbing in the ceiling. It was a massive coordination effort to get everything to fit and everything to lay out the way we liked it,” said Cain.

The building may appear untouched from the outside, but the Army Corps is modernizing the center to make it a safer environment for the cadets and faculty.

They are doing this by removing asbestos and lead paint, providing handicap accessibility, improving the air ventilation system, installing a new roof, improving the building information systems and installing

shatterproof windows inside of the old leaded glass-paned windows, which will prevent glass shatter from earthquakes and provide some energy efficiency.

The project is expected to be completed in 2016. Graham said: “When we are done we are going to have not the same capabilities, but new capabilities. We are going to be at the cutting edge of physics, chemistry and laser technology. The Army Corps is using this opportunity to shift us way into the future and beyond. This was not a chance just to get up to standard; it was a chance to get into America’s future.”

Kimbrough looks forward to seeing the new center when it’s completed. “I think a center like this will spark the interest of so many cadets, and years from now they’ll look back and they’ll be asked why they’re do-

ing what they’re doing now, and they will say because of that science center that was built at West Point. I think the future is really bright and it’s only going to be brighter now.”



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