ENGINEERING CENTER

West Point
READY ≫≫≫ ★
READY TO **SERVE**. READY TO **LEAD**.

According to Dr. Led Klosky, Professor of Civil Engineering, the CEAC is a future-focused modern academic facility that will enable and inspire collaboration across disciplines in shared classroom and lab spaces, such as the Robotics Complex and High Bay (pictured).

BRIDGING APPROPRIATED AND MARGIN OF EXCELLENCE FUNDING

During his keynote address at the AUSA conference in October 2016, General Milley noted that the significant geopolitical, economic, technological, and societal trends that will determine the operational environment of 2030-2050 are already within view. He charged Army leaders with seeing those trends and deliberately working together to determine how those trends will connect on the battlefields of the future.

The Cyber & Engineering Academic Center (CEAC) at West Point will directly support General Milley's vision of a technically competent force that can tackle complex problems–solving these problems demands integration and collaboration across disciplines. The CEAC will house the Departments of Civil & Mechanical Engineering, Electrical Engineering & Computer Science, and Systems Engineering together under one roof, and will also provide connectivity to two other academic buildings. Through laboratories and hands-on core-course activity spaces, access to new technology and equipment, and opportunities for unique collaboration, the CEAC will facilitate a powerful and broad impact within science, technology, engineering, and mathematics (STEM) scholarship and industry. Project-Based Learning supported by appropriate facilities is a key component of achieving this vision. Critical engineering and computer science disciplines will move into 21st Century facilities providing open, collaborative, modern spaces that will enable and inspire America's best and brightest to pursue studies in some of the most difficult but rewarding STEM fields.

This proposed academic facility is an investment that will pay great dividends toward the Army's need for technical competence in the officer corps and the ongoing growth of the Cyber Branch, which is assessing the majority of its officers from West Point.

While the government has committed more than $200 million to the project, attaching Margin of Excellence private funding to the project is a huge force multiplier. Two key structures will ensure that the facility achieves its goal of integrating academic programs and projects across disciplines.

The Redoubt: Adding a fourth floor to the facility increases collaborative spaces for cadets and faculty to engage with each other and host notable speakers in a setting that offers views of the Hudson River and looking north across Central Area.

The Gateway: By connecting the CEAC to Mahan Hall, this bridge forms an iconic entrance to West Point and increases the number of individual and group study spaces for cadets.

Together, the CEAC and its Margin of Excellence additions will be vibrant, exciting and modern while showcasing an exterior that honors West Point's traditions and heritage.

WORLD-CLASS FACILITY

Achieving that vision of readiness for the battlefield of 2030 requires top-flight facilities to demonstrate both our commitment to cadet candidates and to deliver the full benefits of project-based learning; collaborative, flexible, interdisciplinary work space is vital. The CEAC at West Point will give the Army a key competitive advantage; great leaders who are prepared to win on the battlefield of the future.

The result of an extensive planning and charrette process, the CEAC at West Point is a 130,000-plus-square-foot, modern academic facility that will enable and inspire collaboration across disciplines that simply cannot happen in the current 1960's-style office buildings/classroom spaces. The Academy instinctively knows that it has to include a variety of ideas from many specialties to get to the right answer to a problem. This means open, collaborative spaces where cadets and faculty from many majors can collide, interact, and *see* each other's work—igniting innovation. The CEAC will provide wide-open spaces for designing and building solutions to real problems, encouraging collaboration across the artificial boundaries created by organizational structures and physical spaces. This will be accomplished through appropriately designed spaces *and*

adjacencies. With the completion of the CEAC, we will have science, technology, engineering and mathematics disciplines shoulder to shoulder in the same spaces, working together with their humanities and social science partners to create innovative solutions and learn the skills needed for a modern, technical Army. It is critical that West Point has modern facilities to deliver engineering and cyber education programs that anticipate Army needs and prepare our leaders for that future environment. Our facilities are not keeping pace with these changes and we are currently well behind our peers. While we produce over 50 percent of all cyber branch accessions, our primary electrical engineering, computer science and cyber education classroom building is a 105-year-old retrofitted horseback riding arena ill-equipped to handle the power and HVAC loads of modern computing and educational requirements. Our primary civil, mechanical and systems engineering classroom building was designed over 50 years ago as a general science building and lacks the modern laboratories and facilities necessary for cutting-edge engineering and design education. As such, innovation is limited rather than enabled.

INSPIRING INNOVATION & COLLABORATION

West Point is committed to ensuring that cadets have an opportunity to work together to grapple with the technology that will shape the future battlefield. Those technologies include cyber and connectivity, environmental and energy sustainability, biotechnology, autonomous machines, the proliferation of sensors, 3D printing and manufacturing, and, of course artificial intelligence. The World Economic Forum has defined the Fourth Industrial Revolution as a fusion of technologies that blur the line between physical, digital, and biological spheres. Such a revolution will undoubtedly impact the operating environment in which our future officers will operate.

To win on the emerging highly technical battlefield, particularly in cyber, the Army needs the best and brightest young Americans to volunteer to come to West Point and to challenge themselves with courses in computer science and engineering. That requires inspiration at every step. The educational landscape is changing radically. Universities are moving to student-centered, multi-disciplinary project-based learning models to develop leaders who rely on critical, creative thinking to solve problems that are technically, socially and spatially complex.

Despite ongoing curricular advancements at USMA, our competitive advantage is fleeting and at risk if we fail to modernize. Nowhere is it more critical that we maintain our competitive advantage than in cyber education. The cyber leaders of the future need to think through not only the question "can we," but also "should we," "under what conditions," and "with what anticipated second and third-order effects?" This argument points strongly to the benefits of collaborative spaces and the value of being able to get cadets majoring in a variety of disciplines to work together to address significant challenges.

The main entrance to the Center, the three-story, light-filled Atrium welcomes cadets, faculty, and visitors. It serves as the hub of the building, tying multiple disciplines together and provides an active, collaborative space. Glass-walled labs, specifically the Robotics High Bay, surround the Atrium, allowing guests to witness and experience the work being done within it.

FUNDING OPPORTUNITIES

Redoubt	$8 million
North *(reserved)*	$3 million
South	$3 million
Terrace *(reserved)*	$2 million
Gateway	$12 million
Atrium *(reserved)*	$3.5 million
Plaza *(reserved)*	$3 million
Quad *(reserved)*	$2 million
Robotics Complex	$3 million
Systems Engineering Complex	$2.5 million
Civil & Mechanical Engineering Complex	$2 million
Cyber Complex *(reserved)*	$2 million
Metal Shop *(funded)*	$500,000
Wood Shop *(funded)*	$500,000
Prototyping *(funded)*	$500,000
Shared Capstone Space *(funded)*	$500,000
Cadet Collaborative Spaces *(7 funded)*	$250,000
EECS Main Engine Room *(funded)*	$250,000
Cadet Capstone Spaces *(8 funded)*	$100,000

Laboratories (15)	$1 million/each

High End Fabrication	Photonics
Engineering Fundamentals	Telecom
Manufacturing	Alternative Energy
Thermodynamics *(funded)*	Power Lab
Aeronautical *(funded)*	EECS Capstone Design Space *(funded)*
Materials Science	
Biomechanics	Shared Computer Lab *(funded)*
Weapons	
Advanced Electronics	

Gateway Bridge	
Terrace Walkway	$2 million
Gateway West	$500,000
Cadet Collaborative Spaces *(7 available)*	$250,000

MARGIN OF EXCELLENCE

Samantha Soper | West Point Association of Graduates
698 Mills Road, West Point, NY 10996
Phone 845.446.1541
WestPointAOG.org

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