COL Andrew B. Williams, PhD, MBA
Dean of Engineering
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School of Engineering

Our vision is to educate innovative engineers that impact the world through principled leadership and entrepreneurial mindset.

THE CITADEL
SCHOOL OF ENGINEERING

Greetings Friends and Alumni,

A famous author once said, "I do not count myself as having laid hold of it yet, but one thing I do: Forgetting what lies behind, I reach forward to what lies ahead." Sometimes I counsel my mentees that they need to figure out ways to document and promote what they have done humbly.

I have so much gratitude for this past year that I want to document it and then move on. I have been blessed with many successes with support from others in cases where I have faced resistance and obstacles.

I have my late Dad and Mom to thank for teaching me how to do that because the challenges I face will never compare to what they faced to give me the opportunities I enjoy now. It has been a little over one year since being here, and I want to take some time to look back to move forward.

When I came here, I presented the vision of educating innovative engineers that impact the world through principled leadership and an entrepreneurial mindset (I've added the last part). Using the four strategic priorities of our School of Engineering, we have been able to accomplish many great things through the leadership and support of my bosses, Provost Sally Selden, and General Glenn Walters, an outstanding faculty and staff, including Melissa West, our Director of Engineering Education Innovation and Assistant to the Dean, and supportive Executive Advisory Board.

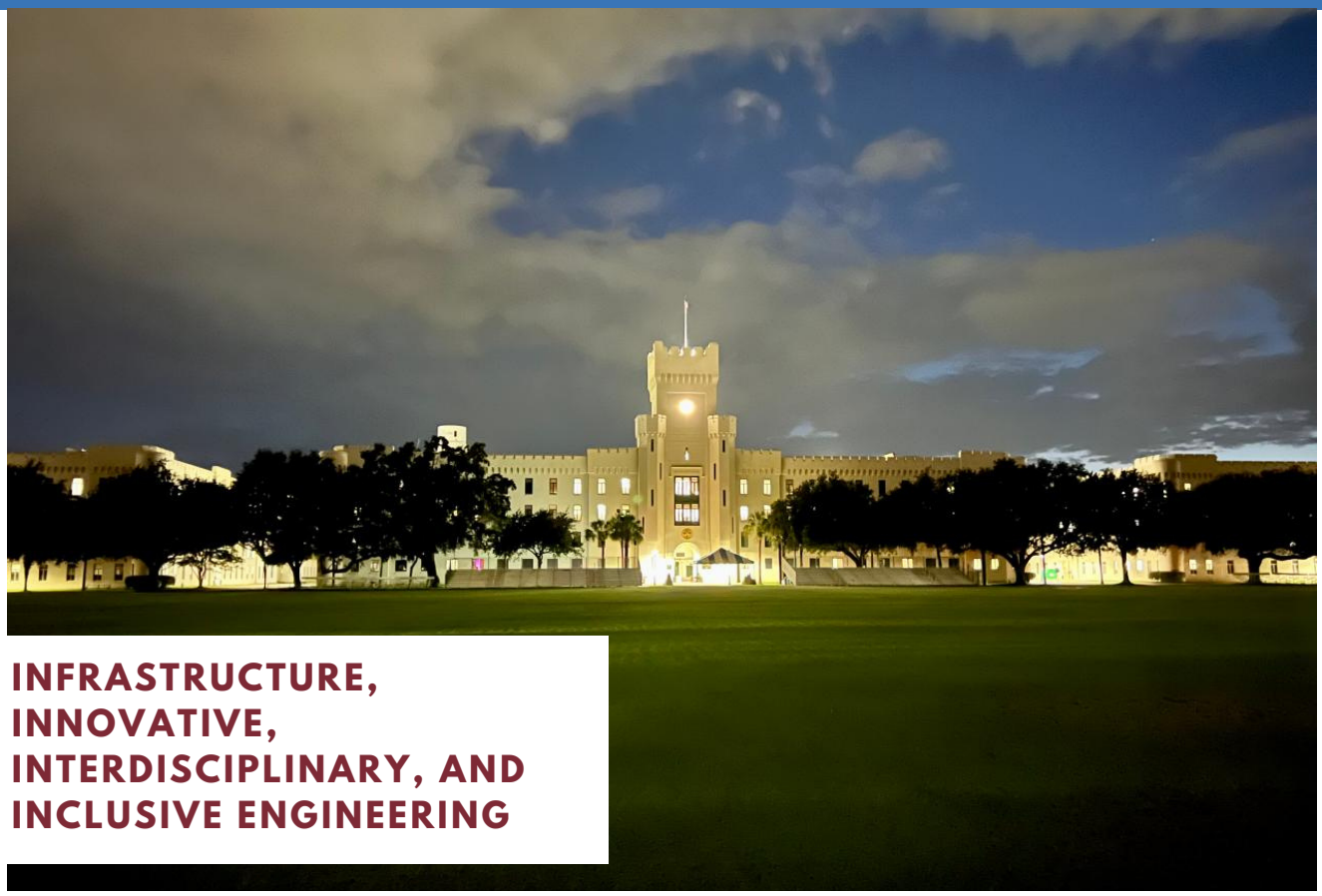
None of this would be possible without the love and support of my wife of thirty-plus years, Anitra Williams, and our most valued and enriching treasures: John, Adrianna, and Rosa.

Andrew B. Williams

Dr. Andrew B. Williams
Dean, School of Engineering
Louis S. LeTellier Chair
Colonel, SCM

FROM THE DEAN'S DESK

LOOKING BACK AT AY2021 -2022 TO MOVE FORWARD



INFRASTRUCTURE, INNOVATIVE, INTERDISCIPLINARY, AND INCLUSIVE ENGINEERING

INFRASTRUCTURE FOR GROWTH - PHYSICAL AND VIRTUAL

In my first year, we've had $24.5 million committed for our new engineering building from the South Carolina Legislature! Previously the most we had raised from our state in one year was more in the $7M range. I was excited when we received the message from our Provost that our team and supporters had made this happen. This past January, I was able to share with our South Carolina House Ways and Means Higher Education Subcommittee how honoring my African American Dad and his service to our nation in WWII and the Korean War motivated me to become Dean at The Citadel. More importantly, I was able to make a case for how impactful our engineering graduates are to our state's economy and workforce.

This new engineering building will prepare our future military, industry, and community leaders to be innovative engineers, ethical problem solvers, and principled leaders.

We are expanding our community partners and hope to create opportunities for more veterans, HBCU graduates, and industry workers to advance their knowledge and careers in this great state. This effort was and will not be an individual effort. The credit goes to our "team" led by President General Walters, Provost Selden, our Board of Visitors, our Foundation, our Executive Advisory Board, and our outstanding alumni. I'm grateful to be alive to be a small part of what we've accomplished and are going to accomplish. I have also been part of a team that has hired our architects, McMillan Pazdan Smith and SmithGroup, to complete our building programming study to meet the needs of our faculty and students. They have provided us with a wonderful customer experience and product.

We have also made significant advances in expanding our virtual infrastructure. We are introducing our faculty and staff to cloud computing. We are also documenting and creating processes, policies, and procedures that will streamline our transactions and interactions, including a SharePoint site as a one-stop shop for our faculty and staff to find the information, forms, and semi-automated processes. Although still in the Beta version, it's online and ready for faculty and staff to use, thanks to the work of our Director, Melissa West.

INNOVATION THROUGHOUT THE CURRICULUM AND CO-CURRICULUM

KEEN Partner Campus

How do you define innovation, and how do you teach it to students? The Kern Entrepreneurial Engineering Network (KEEN) offers a framework to do just that. This year, I have been able to work with the Kern Family Foundation, directed by Doug Melton, other KEEN Network collaborators, and my School of Engineering Vision Taskforce to be officially invited to join as a KEEN Partner Campus!

We were invited to join a select group of outstanding institutions such as Georgia Tech, The Ohio State University, Campbell University, University of North Carolina – Chapel Hill, Kettering, University of Wisconsin-Platteville, Rose-Hulman Institute of Technology, and others as the first and only senior military college or academy. Even before this designation, we involved our faculty and me in the KEEN National Conference, the ICE 2.0, the KEEN Network, and KEEN Faculty Development Workshops.

Earlier this month, six of our engineering faculty presented to our entire School of Engineering the exciting workshops and projects they are working on related to Entrepreneurial Mindset Learning(EML), including:

- Integrating Curriculum with Entrepreneurial Mindset 1.0 (I attended the 2.0 version to do strategic planning),
- Problem Solving,
- Faculty-Industry Relationships (FIRe),
- Leadership Unleashed
- Enhancing DEI through EML

We have some exciting things planned as new doors are opened for funding, learning, and collaboration around EML through the Kern Family Foundation and the KEEN Network.

AWS Education Champion

I am grateful for being selected this summer 2022 as an Amazon Web Services (AWS) Education Champion. This recognition highlights my faculty, students, cadets, and community partners who have assisted in my efforts to empower young people to reach their full potential academically, vocationally, economically, and spiritually using technology, engineering, and computing.

At The Citadel, with the help of AWS partners such as Curtis Darst, Travis, and Austin Johnson and their teams, we introduced, engaged, and educated our students and cadets in artificial intelligence (AI) using DeepRacer and Alexa. Dr. Siripong Potisuk led our students and cadets to compete in the Beta version of the Collegiate DeepRacer league to a high finish. We were able to engage our industry partners, students, and cadets in a diversity pre-engineering expo event around Alexa.

We partnered with AWS to educate our faculty in AI, machine learning, and the cloud in an AI for Beginners Faculty workshop that we hosted for any Citadel faculty and special guests from Claflin University. The AWS Education Champion designation I received was for my body of work in broadening participation in computing and engineering at Spelman College, Marquette University, University of Kansas, University of Iowa, and at The Citadel.

INTERDISCIPLINARY COLLABORATIONS ACROSS DEPARTMENTS, SCHOOLS, AND INDUSTRIES

Much of our interdisciplinary collaborations I lead support our aspirational goal of becoming the premier senior military college for artificial intelligence (AI) and machine learning (ML) education to prepare our leaders for an AI-enhanced military and a data-infused society and workplace. We have worked to form collaborations across our departments, across our campus, around the state and the nation around artificial intelligence and machine learning. Here's some of what we accomplished last year.

Strategic Plan for Artificial Intelligence at The Citadel

With the support of our President, Provost, Deans, and many department heads, we developed a Citadel-wide strategic plan for Artificial Intelligence and Machine Learning at The Citadel. It became a special burden of mine when hearing the story of one of our star engineering graduates recount how he was behind in AI knowledge and practice at his new job at a defense contractor and had to teach himself AI on his own. Our strategic plan includes four types of learning pathways we are building:

- Literacy in AI, autonomy, and AI ethics
- Proficiency in AI and ML decision-making
- Master in AI and ML programming and design
- Capacity for AI education and research.

We are working to grow our AI literacy, proficiency, mastery and capacity by:

- Creating an AI minor for literacy
- Offering a concentration in AI in computer engineering for proficiency and mastery
- Offering a graduate certificate in AI/ML for mastery
- Creating a Center for AI, Algorithmic Integrity, Autonomy Innovation (AI3)

Our AI Strategic Plan was presented to The Citadel Board of Visitors and approved over the summer. This all will happen through a continued team effort.

Inter-Institution Collaborations around Artificial Intelligence and STEM

There are several inter-institution interdisciplinary collaborations that I'm excited were initiated this past year as well as my participating in leadership for national engineering and computing organizations:

- Our NSF EPSCoR grant proposal with Clemson, USC, MUSC, Benedict, and College of Charleston that involves AI-based healthcare, research, workforce development and education that will benefit the state of South Carolina. Dr. Siripong Potisuk and Dr. Ryan Integlia in our Electrical and Computer Engineering department and Dr. Mark McKinney were key players in The Citadel's involvement.
- Our work with the South Carolina Council on Competitiveness involving the development of the Palmetto AI Corridor, the AI Innovation Lab, and AI Pathway and Standards Study and Working Group. Great to have Dr. Siripong Potisuk and Dr. Ryan Integlia on this project as well.
- Our IdeaThon around the theme of sustainable supply chain sponsored by APL Logistics, Lamont Nelson and Hakan Yaren, and in partnership with Claflin University, Dean Nicholas Hill, Dr. Johnny Lowery, and Prairie View A&M University, Seaborn Carter.
- Our partnership with AWS for AI, ML, and cloud computing education that is getting ready to accelerate through AWS Academy and my involvement as an AWS Education Champions award winner.
- Our brand new partnership with the Stanford Deep Data Research Center with Dr. Amir Bahmani around AI, precision medicine, and cloud computing.
- Our involvement with Dr. Jean Ardino, Arizona State University, and her SMART STEM grant that will stand to benefit our students and cadets tremendously if funded.

INCLUSION IN ENGINEERING AND OUTREACH

When we received our American Society of Engineering Education (ASEE) Diversity Recognition Bronze Level award, the highest that has been given so far, one Citadel alum remarked how remarkable and proud he was. We are grateful for how our Provost Sally Selden has been both a role model and champion for diversity and inclusion since she began here. It is a privilege to work under her leadership.

ASEE Diversity Recognition Award – Bronze

Now that we have received the Bronze level award, we can shoot for the Silver level. So far, no institution has received this award. I would have to say that every historically black college and university (HBCU) that has engineering, including North Carolina A&T, should be considered gold. HBCUs graduate around 25% of all black engineers and computer scientists. We have a lot to learn and gain from every minority-serving institution.

HBCUs and the Army Corps of Engineers

Early during my time at The Citadel, I was invited to participate in a series of meetings with the HBCUs in South Carolina and the Army Corps of Engineers that is located adjacent to our campus. Congressman James Clyburn's office convened the meeting to let students and cadets know the about the opportunities that the Corps of Engineers affords. I hope we can partner with HBCUs to offer a two-plus-two engineering program for schools that do not offer an engineering curriculum. This collaboration led to our partnership with Claflin University for our IdeaThon and AI for Beginners faculty workshop.

National Academy of Engineering Sharing Admissions Policies that Promote Diversity in Engineering

Beth Cady, National Academy of Engineering, has been leading workshops and panels on this topic of sharing admissions policies that promote diversity in engineering. At the ASEE Conference this summer in Minneapolis, she invited me to share on a panel there focused on the same topic. I hope to apply best practices at The Citadel for all of our programs, including our cadet, college transfer program, and evening program.

Facilitating Engineering Culture Roundtables at ASEE 2022

Planning and participating in the Engineering Culture Roundtables at the ASEE 2022 Conference as a facilitator with our leader, Dr. Adrienne Minerick, was a delight. We are still working on the results. However, it was encouraging to see different faculty and institutions coming together on how we can integrate systems thinking into engineering culture.

ASEE Engineering Deans Council Diversity, Equity, and Inclusion Committee

Led by Leo Donald, University of Georgia, I have appreciated being part of the ASEE Engineering Deans Council committee that looks at activities and programs across the country to see how we can encourage improvements in diversity, equity, and inclusion (DEI).

ACM Education Advisory Board and DEI committee

I've learned and appreciated how key professional organizations set policies, programs, and projects that can truly move the needle if properly designed. These are ongoing efforts, and I'm encouraged by our recent progress.

SUCCESS IS NEVER FINAL

In looking back to move forward, I am reminded about one of my favorite quotes that I shared with our first-year engineering students and cadets at The Citadel this week.

"Success is not final. Failure is not fatal. It is the courage to continue that counts."

Winston Churchill

Success is never final. As the servant leader of our School of Engineering, I can do what I can to help us see our vision, raise our expectations for success, provide the resources our faculty and staff need, and instill a sense of belief and belonging. In my first year we were able to accomplish many things to help students and cadets. I'm looking forward to diving deeper into the relationships and initiatives we developed this past year. Thank you to President General Glenn Walters, Provost Sally Selden, our many partners, donors, and supporters including the School of Engineering Executive Advisory Board, The Citadel Foundation, The Citadel Board of Visitors, the Kern Family Foundation, Amazon Web Services, APL Logistics and our outstanding alumni, faculty, staff, students and cadets.

You all are vital to helping us prepare our students and cadets to change the world for the better through engineering and principled leadership.

Please do not hesitate to reach out at Engineering@Citadel.edu.