Dear Friends, Family, and G&EnE Nation:

Greetings to each of you from West Point! As with many things over the past few years, our newsletter fell by the wayside as we adjusted to the changing environment and new ways of teaching, developing, and inspiring Cadets. I apologize for the temporary hiatus of our communications with you, but worry not! The 5th and 6th floors of Washington Hall are as busy as ever with seemingly endless movements of Cadets, fantastic and engaging classroom instruction, and cutting edge research. We remain steadfast in our mission to enhance the intellectual, character, and military development of all Cadets while supporting the continued development of our faculty and staff. This is evidenced by our celebrations of amazing accomplishments, including:

- G&EnE Cadets earning graduate scholarships (Marshall, Southampton, Knight-Hennessy, and Fulbright, to name a few);
- numerous faculty academic and military promotions;
- awarding of research funding (over $1.5 million in the past year);
- cultural immersion experiences, summer research, and work-studies across the country and around the world (95 Cadets last summer);
- faculty and Cadet scholarly publications and presentations (37 and counting so far this academic year); and much more.

It takes a tremendous team to make all of this happen—the following pages will bring you up to date on changes to Team G&EnE, but I’d like to highlight a few. We bid farewell to COL Mindy Kimball and her family. Mindy retired last October following over 26 years of service—we miss her, and are grateful for her MANY contributions to the Department and the West Point community. The Academy recently selected LTC/P Matt Baideme as Academy Professor and Director, Center for Environmental and Geographic Sciences, and MAJ Jordan Laughlin as future Academy Professor and GIS Program Director. The department is thriving as we continue to inspire Cadets and provide intellectual capital for our Army and the Nation. I encourage you to connect with us on our various social media platforms and website where we tell G&EnE’s story—we have re-crafted our approach to share the latest department news and achievements of our faculty and Cadets with department alumni, parents of our current Cadets, former faculty, and friends of the department. You inspire us! If you are part of G&EnE Nation, we want to hear your story. Let us know what you are doing and we will share it. Please contact me at mark.read@westpoint.edu.

Go Army!
Mark Read

Check us out at https://bit.ly/GEnE_Home and follow us on Instagram @usma_gene or on Facebook @WPGENE
Hello from West Point and the hallowed Washington Hall 5th floor! The Environmental Program hopes that our alumni – both Cadets and former faculty – are doing well and enjoying life, wherever you may be. Our program faculty members continue to develop environmentally minded leaders of character through outstanding teaching, active learning experiences, research projects, and cheering on the Army team.

For those of you who have been away from West Point for a while, our Program educates environmentally minded leaders of character by leading two academic majors, Environmental Science and Environmental Engineering, and educating non-engineering majors through a three-course Environmental Engineering Sequence. Our sequence continues to be the most requested and most highly regarded engineering sequence at West Point. From a curricular perspective, we continue to excel – successfully achieving ABET reaccreditation for environmental engineering in 2021, and executing a very productive external review for our environmental science major in 2022. Despite these successes, we strive for continual improvement, seeking ways to integrate new pedagogical teaching and learning approaches. Over the last three years, the Green Team has researched and published results from twelve different educational studies. Most importantly, however, we have integrated results from these studies into each of our courses to enhance Cadet education.

Since our last newsletter published in 2019 (pre-pandemic), we’ve had a complete change of program-level leadership. After our successful ABET reaccreditation, Dr. Mike Butkus stepped down after several incredibly productive years as Program Director. COL Mindy Kimball, who served as the Environmental Science Curriculum Coordinator (amongst many other amazing things) retired in 2022. LTC/P Andy Pfluger now serves as the Program Director, with LTC Cristian Robbins (arrived in summer 2021) serving as Environmental Engineering Curriculum Coordinator. Dr. Patrick Baker serves as Environmental Science Curriculum Coordinator, and LTC Adam Brady (arrived in summer 2021) serving as the Core Engineering Sequence Coordinator and Lab Manager. This year we will see the departure of several outstanding junior military faculty, MAJ Chelsea Linvill and MAJ Missy Moehouse, while welcoming LTC Lauren Koban (incoming Environmental Science Academy Professor) from George Mason University and CPT/P Brett Krueger, a MacArthur Leadership Award Winner, from Stanford.

Our faculty continue to lead Cadets and achieve our institutional mission in each of our five faculty domains – teaching, service, scholarship, Cadet development, and facility development. From a service perspective, I’d like to highlight the efforts of our program, recently redesignated as the Green Team Environmental Club (GTEC), which has spearheaded numerous projects at West Point, on Constitution Island, and in Highland Falls. Further, our environmental science faculty have taken teaching from the classroom to the Hudson River by leading a “Day in the Life of the Hudson River” event, which educates hundreds of students of all ages about the Hudson River ecosystem. For their efforts, MAJ Missy Moehouse, Ms. Kim Quell, Dr. Baker, and COL Kimball earned the prestigious West Point APGAR Award for Excellence in Teaching in 2022.

While there are so many achievements I could highlight, I only have space to mention a few more. First, our program has graduated over 110 awesome Cadets over the last three years. Second, our program has recently had great success mentoring Cadets to earn scholarships for graduate study. Cadet Marley Wait (Class of ’23, Environmental Engineering) won the Marshall Scholarship this year. Recent graduates 2LTs Anna Tovkach (Knight-Hennessy – Stanford), Ian Morris (GEM – Stanford), and Mia Padon (Southampton University, England) are other scholarship winners. LTC Mike “Griff” Greifenstein has also worked with the Med Service Branch to assess two Cadets per year directly into the 72D (continued on pg 3)
Laboratory environments for most Cadets are relatively straightforward exercises in managing glassware and reagents—not true for some in GENE! Cadets are breaking out drills, saws, and mallets to assist in the design and construction of EV’s newest bench-scale experimental system. The system will be used to test low-energy wastewater treatment; to improve systems similar to the Camp Buckner Wastewater Treatment Plant that do not currently achieve appropriate nutrient removal.

Discharge of treated wastewater high in nitrogen, phosphorus, sulfate, and other trace organics is currently legal, but could pose important challenges as regulations become more stringent to protect downstream drinking water sources. Biologically-active filters could serve as an effective and efficient fix if we understand how they best operate.

Three columns were built by faculty and Cadets in EV402 (Biochemical Treatment), then filled with wood-chips and inoculated with microbes from Target Hill Wastewater Treatment Plant. This semester, Cadets Marley Wait ’23 and Maci Hodgins ’24 will profile the startup of the system. Will the columns be able to treat Camp Buckner’s wastewater? Come to Lab B/C on the 5th floor of Washington Hall to find out!

- LTC Adam Brady, Dr. Kate Newhart, CPT Ian Moss

(From the Green Team) (Cont. from pg. 2)

Very last, our program has enhanced our emphasis on novel research to support DoD and Army initiatives in the environmental, renewable energy, and climate spaces. In total, our faculty over the last two years have led or been members of teams that have earned over $2M USD in grants to study many environmental topics – ranging from waste-to-energy, micro-plastics in aqueous systems, water & wastewater-related data analysis, indoor air modeling, and ecosystem acoustics. These projects, which are normally executed as capstones or independent studies with Cadets, have resulted in over 25 peer-reviewed publications over the last three years.

Again, these examples are just some of the great things being accomplished by our faculty as we each strive each day to teach, mentor and inspire our students. If you are a 2017 to 2019 graduate, please consider applying to come back to West Point as a faculty member. We’d love to have you join the Green Team!

- LTC/P Andy Pfluger
A WORD FROM GIS

The Geospatial Information Science major is continuing to inspire Cadets as the largest major within the Department of Geography and Environmental Engineering. Currently we have 28 Firsties, 38 Cows, and 24 Yearlings enrolled in the program with a very eager incoming class of Plebes who are soon to finalize their major selection. Exceptional performers over the last two years include Adam Hoxeng, ’21, (Fulbright Scholar studying Earth and Space Physics Engineering at the Technical University of Denmark) and Adam Johantges, ’22, (Stamps Scholarship awardee and Fulbright Scholar studying Geologic Sciences with collaborators from NASA at the Institut für Planetologie at the University of Münster in Germany), along with a number of Space Badge awardees and Honors Graduates. The culture of candor, enthusiasm, and collaboration that has defined the GIS program since its inception is thriving thanks to our outstanding team and the Cadets we are privileged to educate, train, and inspire.

The GIS Faculty has continued to evolve to meet the demands of the industry and program. MAJ Jordan Laughlin was selected as COL Will Wright’s successor as GIS Program Director. MAJ Laughlin will return to the Force to become qualified as a MAJ before returning to graduate school to complete his PhD. Dr. Matt O’Banion, our Title 10 civilian faculty, leads the program’s Geo-visualization Lab and, with his sabbatical approved, continues to be the main driving force behind our curriculum modernization and much of the ongoing and planned research with our government and NGO partners. Our program’s rotating officer instructors include MAJ Jordan Laughlin (future program director), MAJ Ryan Kirkpatrick, CPT Victoria Gramlich, and CPT Carter Kelly.

MAJ Jordan Laughlin is a Space Operations officer with a background in both the Infantry and Military Intelligence branches and brings with him an expertise in Remote Sensing. MAJ Ryan Kirkpatrick is a Civil Affairs officer and US Army Reserve augmentee, activated from his role as a researcher in the US Army Corps of Engineers’ Geospatial Research Lab where he leads a research program focused on the development of lidar sensor hardware and software. Ryan taught Cartography this past semester and may be returning in future semesters to teach Advanced Remote Sensing.

CPT Victoria Gramlich, our resident Logitician, is one of the new additions to our faculty and earned her MS in Geospatial Information Science from SUNY-Albany in 2022. Victoria is in the process of assuming the workhorse role of teaching Cartography and Intro to Geographic Information Systems. CPT Carter Kelly, an Armor officer and our second new faculty addition, earned his MS in Geomatics from the University of Florida in 2022 and, after spending this past academic year as the Intro to Geographic Information Systems course director, will be taking over Remote Sensing and Surveying starting next year.

Over the summer, the GIS Program maintained its reputa-
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SURVEYING IN VIRTUAL REALITY

With collaborators from the Surveying Engineering program at Penn State University at Wilkes-Barre, Dr. Matt O’Banion is investigating the use of virtual reality (VR) for reinforcing classroom instruction. For EV380, Principles of Surveying, Cadets use VR to gain simulated hands-on experience with the technique of differential leveling prior to conducting the real survey at Trophy Point. The VR experience transports Cadets from the classroom to a virtual world where they can efficiently gain repetitions with leveling a tripod using a tribrach, reading a leveling rod through an automatic level telescope, and navigating variable terrain while balancing foresight and backsight distances. While the use of VR is proving useful to enhance classroom activities, it is unable to simulate the true trials and tribulations of surveying on the grounds of West Point, as Cadets have been doing for over 200 years.

- Dr. Matt O’Banion

A WORD FROM GIS (CONT. FROM PG. 4)

...tion as among the most engaged across the Academy. Since our last letter, we have more than doubled our Cadet involvement in AIADs at the National Geospatial-Intelligence Agency (NGA), Army Geospatial Center, research efforts in Alaska, and The USC Institute for Creative Technology. We had the opportunity to bring some of our Cadets to the ESRI User Conference in San Diego, California, and sent more to participate in research across the country, to include Hawaii, Mississippi, the north slope of Alaska, and Washington DC.

- COL Will Wright
GEOGRAPHY UPDATE

During this academic year, 27 Cadets from the Class of 2026 declared geography as their major: 18 human geography, four physical geography, and five human-environment geographers. On May 27, 2023, 16 Cadets are set to graduate with the following degrees from the program: 11 human geography, one human geography with honors, and three human-environment geography, two human-environment with honors, three physical geography, and one physical geography with honors. The Geography Program is sending three of our honors majors to the annual conference of the American Association of Geographers in Denver, Colorado. The Cadets will present their honors research projects during a poster session. For the second consecutive year, the program is holding a faculty development conference in Israel, sponsored by the MirYam Institute. Eight departments are participating in the conference, as well as one member of the Dean’s staff and one member of the Superintendent’s staff. LTC/P Fuhriman, the Geography Program Director, is chairing the conference, and CPT/P Christiana Fairfield is attending to represent the program.

After graduation this year, the program will also conduct the Severe Weather AIAD to the Plains states, led by Dr. Adam Kalkstein and Lt Col Jim Hughes. We are also conducting the annual Israel AIAD, led by MAJ Aaron Korman and CPT/P Logan Lee, an AFRICOM AIAD to Ghana, led by Dr. Russell Stevenson of the Dean’s Academic Research Division, and an AFRICOM AIAD to Kenya, led by CPT/P Ian Moss of the Environmental Program.

The AIADs to Africa stem from an existing and expanding relationship with AFRICOM. Last year, the program sent ten Cadets and three faculty members to six countries -- Togo, Rwanda, Tanzania, South Africa, Lesotho, and Eswatini. The goal for these AIADs is twofold. First, the AIADs support AFRICOM requirements to visit and review humanitarian assistance projects in those countries. Second, Cadets have the unique opportunity to experience new cultures firsthand. Cadets visit humanitarian assistance projects ranging from education, health, and disaster support and learn how the DoD fosters relationships with local and state leaders on the African continent and works with the US State Department to achieve common goals.

This summer, the Geography Program will conduct an AFRICOM AIAD with the Principal of Mzamowethu Public School (East London, South Africa) and a U.S. State Department official discussing the impact of the new school extension on the community.

“Cadets visit humanitarian assistance projects [...] and learn how the DoD fosters relationships with local and state leaders on the African continent and works with the US State Department to achieve common goals.”
Gamma Theta Upsilon is the International Honor Society for Geography. This fall, our local chapter, Lambda Mu, hosted several events in conjunction with Geography Awareness Week in November, including a lunchtime set of lightning talks by faculty and a map-a-thon to help support mapping of vulnerable populations. We also hosted a dessert gathering to update Cadets on activities in the department and upcoming travel study opportunities during spring break and the summer. Last spring, the Lambda Mu Chapter inducted 13 new members, including Cadets Samantha Edwards, Jeremy Good, Nolan Green, Adam Johantges, Brandon Roy, Garrett Smoot, Jackson Bertelsen, Bogdan Daniliuc, Jonathan Gubert, Kyle Patel, EC Presnell, Olivia Skelton, and Noah Watkins.

- Dr. Richard Wolfel

Center for Languages, Cultures, and Regional Studies (CLCRS)

G&EnE co-hosts a Dean’s level Center of Excellence with the Department of Foreign Languages, that focuses on teaching, training, assessments and scholarship advancement in the areas of language proficiency, cross cultural competence, and regional knowledge. CLCRS had a busy 2021-22 academic year. In the area of assessment, CLCRS continued its role as the chief proponent for assessing the study abroad program. CLCRS hosted the semester abroad reintegration week program to help Cadets returning from Study Abroad reflect and situate their study abroad experiences into their academic development. The culminating event of the reintegration week included a Cadet presentation to the Superintendent and Dean that discussed their growth in language proficiency, cross cultural competence, and regional expertise.

In the area of scholarship, CLCRS personnel conducted research on several Center projects. Drs. Watson and Wolfel co-authored and presented a paper at Air University’s Language, Regional Expertise, and Culture Symposium at Maxwell Air Force Base, Alabama. In addition, the Center continued its relationships with the Defense Language National Security Education Office (DLNSEO), and the US Army Combat Capabilities Development Command (DEVCOM) to conduct applied research to benefit DoD and the Army. The Center is currently investigating the influence of triggers of urban instability on Narrative and Indirect Competition in partnership with DEVCOM and AFRICOM.

- Dr. Richard Wolfel

Geography Update (cont. from pg. 6)

The faculty will bid farewell to Lt Col Jim Hughes (USAF), and Majs Pat Copeland and Alex Pytlar who are all moving on to their next assignments. We wish them all the best in the future. Joining the faculty in 2022 were LTC Richard Knox, who returns to the department for his second tour, and CPT/P Christiana Fairfield. Welcome to the department!

- LTC/P Chris Fuhriman
The Center for the Study of Civil–Military Operations (CSCMO) and the Department of Geography and Environmental Engineering (G&EnE) provided support for a project funded by the Office of the Secretary of Defense (OSD) that aims to enhance understanding of the civil component of operations. As part of this support, CSCMO and G&EnE managed and hosted operational tests and Soldier evaluations of technologies that are being developed under OSD's Foreign Comparative Test (FCT) program. CSCMO and G&EnE will host the next operational testing and evaluation event in July 2023 that will involve Soldiers from the 353rd Civil Affairs Command. Previous Soldier events also included Soldiers from the 353rd as these events help to build relationships between West Point and that command. The Soldiers provide technology developers with much needed feedback as they go through the development process and, in return, Soldiers have reported that the CSCMO- and G&EnE-hosted events provide them with a great opportunity for training and to participate in a project that has value for their missions.

The technologies being developed under the OSD FCT program are being overseen by the Army’s Intelligence and Information Warfare Directorate. These new technologies, being developed by a French company called Preligens, uses satellite and open-source data to prepopulate surveys within a civil information data system developed and managed by Esri. The ability to prepopulate civil surveys reduces the time and effort required for Soldiers to gather data. With each stage of technology development, additional analytics are added that allow for monitoring of critical civil infrastructure.

During the operational testing at G&EnE, Soldiers are trained on the data system and then conduct practical exercises using the FCT-developed technology with the objective of assessing how effective that technology is in speeding up the collection and analysis of civil information without sacrificing data quality. Previous Soldier events focused on gathering data on power generation stations and related power grids. The event, scheduled for summer 2023, will focus on use of new technologies to monitor cultural sites in conflict zones, such as in Ukraine.

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This new “change detection” component of the technology monitors for changes in a site that indicates it is being impacted by the conflict in the region. Also helping with the development of this technology are members of the Army’s Monuments Officers program, the Cultural Heritage Monitoring Lab (CHML), a partnership between the Virginia Museum of Natural History (VMNH) and the Smithsonian Cultural Rescue Initiative (SCRI), as well as Soldiers with the 1st Special Forces Group.

The operational test events are part of the continuing effort of CSCMO and G&EnE to participate in projects that aim to support the civil domain of military missions. G&EnE is an ideal location for the testing and evaluation events because of its world-class GIS lab facilities. And CSCMO’s relationships with Civil Affairs Soldiers plays a key role in linking technology developers to the Soldiers who will most benefit from use of these new technologies. Results from previous testing and evaluation events show that the technologies being developed do improve the ability of Soldiers to provide relevant analysis for commanders and speeds the process of doing so. As a result, OSD has opted to continue funding support for development and CSCMO and G&EnE have played an important role in helping to bring new technologies to Soldiers in the operational Force.

- John Melkon
Lynndee Kemmet

PROJECTS DAY RESEARCH SYMPOSIUM

Thank you to all of our partners, collaborators, guest evaluators, and judges who participated in West Point’s 23rd Annual Projects Day in April 2022. The quality of the event and the impact on our Cadets would not have been as great were it not for your contributions of time, expertise, and wisdom.

G&EnE Cadets presented over 50 projects last year. Washington Hall was abuzz with posters, displays, and presentations of Cadets’ capstone projects, and individual and group research. The breadth and depth of projects was capable of satiating anyone’s intellectual desires, with projects truly exemplifying the department’s ability to span STEM and humanities and social sciences disciplines.

“Best in Program” recognition was awarded to:

1. Environmental - Cadets Eric Kulkarni and Max Brault for their work to establish a sampling methodology for microplastics in fresh water;
2. Geography - Cadets James Baillargeon, Margaret Covey, Anthony Marco, Austin Packard, and Andrew Walden for their geographic analysis of the operational environment in Tbilisi, Georgia; and,
3. GIS - Cadet Tessa Kimbler for her work to map handicap accessibility of facilities at the United States Military Academy.

We are eagerly anticipating the 24th Annual West Point Projects Day Research Symposium in early May 2023. Similar to previous years, we expect more than 50 exciting projects showcasing our Cadets’ ability to tackle complex and challenging problems on the cutting edge of their disciplines. If you’re interested in taking part, please contact GENECEGS@westpoint.edu.

- LTC Matt Baideme
As a member of the G&EnE Staff and Faculty, you have the opportunity to promote excellence in Cadet development through inspired teaching, gain credentialing and professional growth, and become part of an organization whose intellectual capabilities are widely recognized, valued, and sought by West Point and the United States Army.
Want to Teach in G&EnE?

Have you considered teaching in the G&EnE Department? Each year we look for Captains with five to six years of Army experience to be selected as future rotating junior faculty to teach in all three of our programs. We send selected officers to receive a Masters degree in the required discipline prior to their 3 year teaching assignment within the department. While the number of positions available varies each year, we are always looking for interested candidates to become members of the D/G&EnE family.

Don’t let this opportunity pass you by! This year we are focusing on Year Groups 2017 to 2019. If you have ever thought about coming to USMA, do not hesitate to apply.

Please contact the G&EnE personnel officer with any questions at GENEPersonnel@westpoint.edu.

The Process:
4. Take the Graduate Record Exam (GRE).

United States Military Academy
Department of Geography
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G&EnE Mission:
To enhance the intellectual, character, and military development of all Cadets within the context of a core course in physical geography, a three-course environmental engineering sequence, four distinct majors, and a diverse offering of elective courses all while supporting the continued development of faculty and staff.