

INSTITUTE REPORT

VIRGINIA MILITARY INSTITUTE
Volume XLV, Number III, November 2016

'Roll with the Discipline'

Revamped Curriculum in Electrical, Computer Engineering Offers Breadth, Depth

By Mary Price



Trajan Crocker '17 and Ashley McManus '17 perform characterizations of solar cells as part of the optoelectronics lab. - VMI Photo by Kelly Nye.

It's not unusual for an academic department at VMI to make minor tweaks to its curriculum each year. The Department of Electrical and Computer Engineering, though, began the 2016-17 academic year with a curricular change so broad that even Col. Shawn Addington, department head, calls it "drastic."

It's the first major overhaul of the department's curriculum in a decade. "Traditionally, our curriculum was very structured, very prerequisite driven," explained Addington.

That rigid framework, he noted, didn't leave much room for cadets to explore their interests, nor did it leave room for faculty to teach courses that aligned with their

See Electrical Engineering, page 14

Cocke Hall Reopens for Cadet, Faculty, and Staff Use

By John Robertson IV

Cocke Hall is again filled with the familiar sounds of iron clanking in the weight room, feet pounding the wooden track, and basketballs bouncing on the courts after reopening to cadets, faculty, and staff Sept. 19.

The \$21 million renovation began last May and is a component of the Corps Physical Training Facilities project, which also includes the renovation of Cormack Hall and the construction of the

new Indoor Training Facility. Cocke and Cormack halls will be rededicated with a ribbon-cutting ceremony on Founders Day, Nov. 11.

The facility serves as a home to VMI club sports teams, individual cadet fitness efforts, and the employee wellness program.

This is the first thorough renovation Cocke Hall has seen since its completion in 1927. Improvements to the facility include

new mechanical systems, group workout rooms, expanded locker rooms, and new equipment housed throughout.

"All told, the fitness equipment cost close to \$400,000," said John Thompson, project manager. "We've got new equipment for the weight room, employee wellness program, powerlifting, and cardio room."

See Cocke Hall, page 13

INSTITUTE REPORT

Volume XLV, Number III, November 2016

The Institute Report, VMI's monthly newsletter, publishes eight issues during each academic year. Inquiries, suggestions, news items, and address changes should be directed to Editor, Institute Report, VMI Communications and Marketing, Lexington, VA 24450-0304; (540) 464-7207; or VMIReport@vmi.edu. © 2016 Virginia Military Institute.

Office of Communications and Marketing

Director	Col. Stewart MacInnis
Editor	Maj. Sherri Tombarge
Assistant Editor	John Robertson IV
Graphic Artist	Robbin Youngblood
Contributors	Scott Belliveau '83 Chris Floyd Stephen Hanes H. Lockwood McLaughlin Kelly Nye Mary Price Brittany Woychak '18

The Virginia Military Institute is committed to providing an environment that emphasizes the dignity and worth of every member of its community and that is free from harassment and discrimination based on race, sex, color, national origin, religion, age, veteran status, sexual orientation, pregnancy, genetic information, against otherwise qualified persons with disabilities, or based on any other status protected by law. Every VMI staff member, faculty member and cadet has the right to work and study in an environment free from discrimination and should be treated with dignity and respect. VMI complaint and grievance procedures provide employees and cadets with the means for resolving complaints when this Statement has been violated. VMI is an Equal Opportunity Employer. Anyone having questions concerning discrimination or the application of Title IX regulations should contact Title IX Coordinator, 212 Carroll Hall, VMI, Lexington, Va. 24450, (540) 464-7072. Any cadet or prospective cadet having questions about disability services for students should contact the Director of the Center for Cadet Counseling and Disability Services, 448 Institute Hill, 2nd floor, Post Infirmary, Lexington, Va. 24450, (540) 464-7667. For employment-related disability services, contact the Employee Disability Services Coordinator in the VMI Human Resources Office, Lexington, Va. 24450, (540) 464-7322.



Professor Shares Math Across Post

By Brittany Woychak '18

When Maj. Amy Givler, assistant professor of mathematics, was hired at the beginning of last year, she began looking for ways to bring math to faculty and cadets inside and outside the classroom.

Last spring she initiated a Math Problem of the Week campaign, posting a different math problem each week outside her office door and around the department. This year, though, Givler wanted to reach out further than the math department.

"Here I get a chance to talk to people in all different departments, and it made me really want to open this up to everyone – not just the math or the engineering students – and to ... come up with some creative problems that might be more interesting to ... people who aren't so mathematically inclined."

Although Givler started the Math Problem of the Week in the spring, this isn't the first time VMI has seen this kind of project.

Almost a decade ago, Col. Troy Siemers, now department head, was in charge of a math problem of the week project that ran for six years.

After resuscitating the project last spring, Givler decided to switch gears and send out a mass email to get more people across post solving math problems.

"I took the people who were interested and put them on a separate mailing list," she said.

Participants – those on Givler's Problem of the Week list – receive the problem on Friday and have until noon on Monday to submit their solutions to receive full credit. As answers come in, Givler tracks the points. Each is worth up to 10 points at start, but the late penalty brings the problems' worth

down by one point per day after Monday. Givler also gives partial credit to those whose answers are not completely correct.

Each week those on her mailing list receive the answer to last week's problem and the leaderboard along with the new math problem. The competition continues throughout the academic year.

"We do have some prizes this year we're going to ... give out," said Givler. "Prizes will go to the top three cadets." Sadly, perhaps, there are no prizes for participating faculty or staff.

In a contest like this one, which lasts an entire academic year, finding enough math problems is a challenge.

"The hardest thing for me has been picking out interesting problems that don't repeat themselves too much. I'm trying to pick things that you can come at from a different viewpoint," said Givler.

A recent problem had to do with fast food chicken:

"Originally, chicken McNuggets were available in boxes of 6, 9, and 20. Obviously, you couldn't order just 2 nuggets, but you could order 12 by ordering 2 boxes of 6. A McNugget number is a positive integer that can be obtained by adding together multiple orders of chicken McNuggets. So, 12 is a McNugget number but 2 and 3 are not. What is the largest integer that is not a McNugget number?"

The answer, 43, is a Frobenius number, named after a mathematician who worked at the turn of the 20th century and developed a similar problem using coins instead of chicken. Givler noted that, had there been only

two sizes of boxes, a formula could have simplified the calculation. But with three sizes of boxes as in this problem, guess and check was the best solution method.

It is problems like these that have sparked the interest of cadets and faculty across post and across departments. From Chicken McNuggets to muppet Count von Count's Twitter account, Givler's Math Problem of the Week has cadets, faculty, and staff pondering the math of it all.



Maj. Amy Givler demonstrates the procedure for solving a Math Problem of the Week. – VMI Photo by Brittany Woychak '18.

History on the Job

Cadets Experience Applied History on Field Trip to Washington, D.C., Federal Agencies

By Kelly Nye

The question is as old as history itself.

“I get asked by parents at the open house, and I got asked by my dad when he dropped me off here in 1991. Why do you want to study history?” said Lt. Col. Brad Coleman '95, associate professor of history.

Many people have the impression that life after a history degree is scholarly, that a history major must become a teacher or a professor. But as the cadets and professors in VMI's history department can tell you, academia is not a history major's only option.

There is also the applied history field. As the name suggests, applied history is when a historian's synopsis of the past informs decision making by policy makers and national leaders. Coleman, who spent 12 years working for the government as a historian in the State Department and as a combatant command historian for the Department of Defense, has plenty of experience in applied history that he'd like to share with cadets pondering careers.

“There are hundreds of professional historians working for the government inside the beltway alone, and tens of thousands working for the government across the globe,” said Coleman, who specializes in Latin America and the Caribbean. “And they do exciting and impactful things ... in the shaping and defining of the choices that we make.”

Coleman, who also heads the John A. Adams '71 Center for Military History and Strategic Analysis, draws on his experience in the classroom. He teaches cadets how to condense pages and pages – sometimes 70 or more – of historical information down to one or two pages of pertinent facts. He even plays the role of policy maker, with the cadets acting as historians.

One of those cadets, Austin Bajc '17, interned two years ago at the history office of the Secretary of Defense. His time there deepened his understanding of the importance of history.

One of the officials he worked with told him, “You wouldn't drive a car without a rearview mirror, and history is that rearview mirror for policy making,” Bajc explained.

It was Bajc, in fact, who had the idea of planning an Adams Center-sponsored trip to Washington, D.C., to tour some of the history offices. It was just the kind of applied history experience Coleman wanted to create.

Invitations were extended to members of the history honors society, Phi Alpha Theta, to spend two days touring the historical offices of the Secretary of Defense, the Joint Chiefs of Staff, the State Department, and the Naval History and Heritage Command.

Ten cadets and three professors took the trip, which was mostly funded by the Adams Center, Oct. 11 and 12. And thanks to friends and former co-workers of Coleman's and the contacts Bajc had made during his internship, the cadets were able to get a behind-the-scenes tour of the Pentagon.

The whole experience broadened the cadets' perception of career opportunities.

“Over the course of the past five or 10 years there's been a move towards what's called 'public history,' which is largely focused on commemoration, museum curation, things of that nature,” explained Maj. Houston Johnson, assistant professor of history and faculty adviser for VMI's Phi Alpha Theta chapter. “But I don't think there's enough attention being paid nationally to the types of history jobs that we were having access to in D.C.”

Cadets not only saw career opportunities in the government, but they also strengthened their understanding of the importance of brevity in a fast-paced world. Writing with clarity in a concise manner is something the applied history field stresses, but it also carries over into many other career fields.



History department cadets and faculty meet with State Department historians Dr. Christopher Morrison (back row, far right) and Dr. Joel Christenson '99 (front row, far right) outside of the Office of the Historian, U.S. Department of State, in Washington, D.C. – Photo courtesy of the Adams Center.

“Something that we saw in the Pentagon is just how frenetic the activity is in the hallways,” said Col. Mark Wilkinson, department head. “But that gives you a sense of the pace of everything that goes on there. And if everybody is working at such a rapid pace, that just reinforces that they don't have time to read a 50-page paper. So the trick is to put the essential information in a clear and easily understood package.”

Wilkinson and the cadets observed that those cadets who plan to commission after graduation will have an advantage over historians who lack military experience. The military context will inform their reporting to policy makers, adding a practical edge to their interpretations of past events.

“I think when both of our worlds as undergrads in history and cadets at VMI converge you're going to get a perfect person to go into a place like the Pentagon and be a historian for the combatant commander or the secretary of defense,” said history major John Borchick '17.

Coleman said the history faculty hopes to include the international studies department in future applied history trips and make them a more frequent occurrence.

Waltz. Swing. Salsa.

Friday Evenings Find VMI's Ballroom Dance Club Alive and Dancing

By Mary Price

"It's a really fun way to end your week. It's just a nice little two-hour break, a chance to not worry about school."

That's what Malcolm Thomas '17 has to say about the Ballroom Dance Club, a group that brings three traditional dances – the waltz, swing, and salsa – to life each Friday evening on the top floor of Scott Shipp Hall.

The group has been extant at VMI for some time, but now owes its popularity to the efforts of one recent alumnus and a handful of current cadets. Nicholas Ballard '14, Thomas's uncle dyke, revived the club in 2013, and it has been sustained by Thomas, Seth Hinton '17, and Alexander Reitzig '17, among others, ever since.

Hinton, a dance aficionado since childhood, has been spreading the word about the dance club with particular fervor this year. "I've put flyers everywhere," he said. "I'm telling people by word of mouth and also reaching out on social media."

His efforts have been rewarded with increasing attendance. One mid-September night, there was a record 64 people there, with an even split between men and women. Thomas described the attendance this year as "fantastic."

Achieving a gender balance is tough, Hinton admitted, and because the Corps of Cadets is only 10 percent female, women from all-female Sweet Briar College come each week to even out the disparity. Female cadets come too, although in smaller numbers than Hinton would like.

"Every week, I try to get female cadets to come, and the ones that do come, I encourage them to bring their friends and roommates," Hinton said.

In addition to the traditional dances for couples, each evening usually features a line dance or two. "We'll do a variety of line dances, from the Cotton-Eyed Joe to the most modern one," said Hinton. "That always gets everyone involved because everyone has a chance to dance."

When the evening is over, each male cadet offers a Sweet Briar woman his arm and escorts her to her car. Sometimes, Hinton noted, friendships form out of these walks to the car, and romantic relationships have had their beginnings there as well. Many evenings, cadets and Sweet Briar women will end their time together at a local restaurant, sharing late-night snacks and socializing.

Hinton, a punter on the Keydet football team, described his outings there as "cheat night" because he breaks his normal habit of healthy eating. Thomas, an electrical and computer engineering major, usually skips the socializing afterward and heads back to Nichols Engineering Building to catch up on work.

Reitzig, who wandered in on the dance group accidentally one night during his 3rd



Members of the Ballroom Dance Club practice their steps in Scott Shipp Hall earlier this semester. – Photo courtesy of Seth Hinton '17.

Class year, said he values the friendships he's developed through the group, both with Sweet Briar women and other cadets.

"It's a lot of fun," he said. "It's a great time."

This time of year, there's a heavy emphasis on getting 2nd Class cadets prepared for Ring Figure, an event marked by at least some formal dances. "Not everything is bump and grind, like most songs are nowadays," Hinton advises 2nd Class cadets. "Learn the waltz. Learn the salsa. Learn the swing, because it's all stuff you will dance to at Ring Figure."

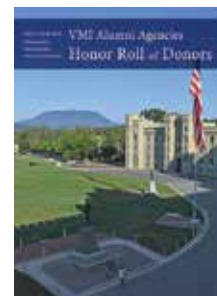
For at least one cadet, the dance lessons have been a venue for learning something that's hard to teach: confidence. "Seth and I have both been in the club since just after [breakout]," Thomas said. "It's affected our cadetships a lot. It's really changed the way that I interact with people. It's made me a lot more of a social person."

For his part, Hinton has found that dancing can span generational boundaries. "I went to a wedding the other weekend, and the grandparents were just astounded that I knew exactly what to do," he commented.

Reitzig is likewise grateful that the Ballroom Dance Club is preserving one of the life's simpler pleasures. "That's one of the best things about ballroom dance here, ... that it tries to bring back some of the formal dances."

Honor Roll of Donors Now Available

The more than 7,000 donors to the Institute, including many of its faculty and staff, who were responsible for the \$77 million in gifts and commitments raised in support of VMI during fiscal year 2016, are recognized in the new VMI Alumni Agencies Honor Roll of Donors. Now available online at www.vmi.edu/honorroll, the document lists all of the individuals and organizations who made a gift to the Institute between July 1, 2015, and June 30, 2016, and includes information about fundraising in support of VMI during fiscal year 2016.



Institute Support Facilitates Four-Year ROTC Training

By Kelly Nye

At VMI it's never too late to commission.

One of the unique opportunities VMI offers to cadets is four years of ROTC enrollment. Because ROTC is required, even non-commissioning cadets experience the skills and leadership training it offers. But with a Corps of approximately 1,700 cadets, enrolling the entire Corps in ROTC poses challenges.

About half of each graduating class commissions, and VMI's Naval and Air Force ROTC units train cadets who plan to follow this path into the Marine Corps, Navy, and Air Force. It is the Army ROTC unit, however, that absorbs, in addition to commissioning cadets, all other cadets in the Corps. The unit achieves this goal with some help from the Institute, where ROTC training is set at a high value and cadets are encouraged to consider commissioning throughout their cadetship.

The Institute provides three positions to the Army unit. These employees, all of whom have an Army background, assist the Army staff in handling the load. And a substantial load it is. At other schools an Army ROTC class size might be as small as five to 10 cadets. At VMI, the average Army ROTC class is anywhere from 30 to 70 cadets.

"If you look at it from that perspective, it's the largest department on post," said Army ROTC commanding officer Col. Michael Wawrzyniak. "VMI does a great job of augmenting [the Army] because of the large number of cadets that take Army ROTC."

The VMI employees all teach classes and help train cadets as if they were Army employees. One of them, Master Sgt. Brian Motter, is retired from the Army after 29 years of service. He works closely with Maj. Alyssa Astphan teaching 1st Class cadets.

November 2016



Cadets from all four classes participated in Army ROTC fall FTX Oct. 21-23, which for 4th and 3rd class cadets started off with a ruck march to McKethan Park on the Chessie Nature Trail. – VMI Photo by Kelly Nye.

They describe their work together as "seamless."

"Especially to the cadets," said Maj. Astphan, who explained that when cadets see an Army uniform they don't know if they're seeing a VMI employee or an Army employee. "I think the best way to describe how we work together is, we're a team. We plan everything together; decisions that we make we almost always make together," she said.

And even though

VMI's Army ROTC class sizes are large, Motter and Astphan agree VMI cadets still have an advantage over cadets from other ROTC programs. One reason is simply the spaces VMI provides for training.

"Some of the facilities VMI has here are incredible," said Motter, referring to McKethan Park, the obstacle course on North Post, and the Leadership Reaction Course, also on North Post. "You normally wouldn't have ... [these] at a regular university."

But the greatest benefit of requiring ROTC for every cadet is the opportunity it lends them. Like any ordinary college student who changes majors at the last minute, cadets can decide to commission at any time, as long as they meet requirements to qualify. Thirteen cadets commissioned after graduation in May 2016 after deciding to do so late in their cadetship.

"That's what college is for: young men and young ladies are going to change their minds," said Motter. "Some wait until their senior year. And the Army is able to facilitate that."

And even if cadets decide not to commission, the lessons they learn in the ROTC program are values they will carry with them throughout their lives. For example, some of the topics in the military science class include risk management, personal finance, and, of course, leadership.

"No situation is the same, if they make the same decision for the same situation on two different days they're going to get two different results," Motter observed.

Once the science of leadership is learned, he noted, the cadets must have the maturity to apply it as an art form. VMI's Army ROTC program offers training and experience to achieve both.



Cadets navigate around McKethan Park during Army ROTC field training exercises. – VMI Photo by Kelly Nye.

'Everybody Can Be a Scientist'

Professors Reach Out to the Community with Physics and Chemistry Activities

By Chris Floyd

Children of all ages crowded into three locations in downtown Lexington Oct. 16, giggling with anticipation, pushing and shoving, all eager to spend the day with ... science?

Yes. An estimated 400 young people gathered in Lexington for the third annual Science Fest and Maker Faire, and from most accounts, they had fun with the hands-on learning approach. They weren't the only ones enjoying the event, as three VMI professors – Maj. Kyle Bantz, Col. Gregory Topasna, and Col. Daniela Topasna – joined in on the festivities and had just as much fun as the students.

"I get an immense satisfaction out of doing this," said Gregory Topasna, who has staffed the fair each year. "It's a lot of hard work, but I get a lot out of it."

So do the children. The VMI contingent, along with scientists from numerous schools and organizations throughout the area, brought with them a wealth of hands-on experiments.

Bantz, for example, taught the children about polymer chemistry as they created a Silly Putty-like compound to take home.

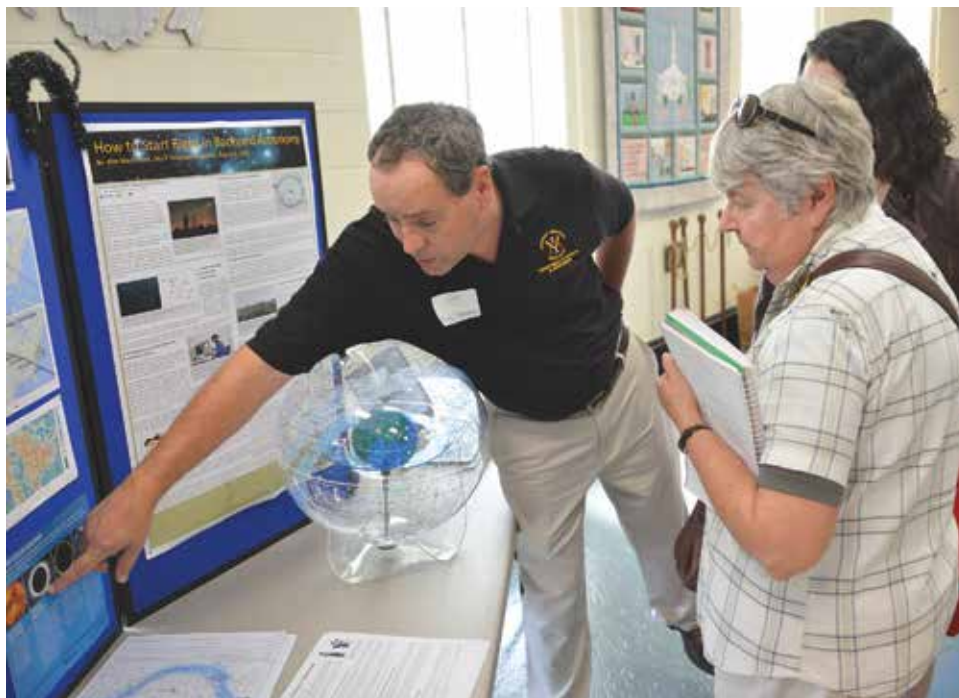
Gregory Topasna, who serves as a professor of physics and astronomy at VMI, brought with him Play-Doh, a planetsphere, and numerous other models to help the children understand the wonders of space.

Daniela Topasna, also a professor of physics and astronomy, allowed the children to play with mirrors, microscopes, and 3-D glasses as part of her demonstration in nanotechnology and photonics.

The hope is that the children will not only have fun, but that they will also develop an excitement and interest in scientific endeavors.

"Psychologically speaking, if it's an enjoyable thing you did, you are more likely to do it again," said Gregory Topasna. "If something is interesting to you, you'll pursue it. If science is boring, then you are likely not to do it."

"I remember doing these types of experiments when I was little, and these are the things that got me interested in being a scientist," added Bantz. "It's always fun to come back and ... get them excited about it at this age."



Col. Greg Topasna talks astronomy with science fair participants. – VMI Photo by Stephen Hanes.

"I feel like there's a fear of science or not knowing the answer," she added. "It's fine not to know the answer, and I explain to the kids that we don't always know the answer. It's important to show them at this age that it's good to ask those questions and it's important not to have the answers and to keep looking for the answers."

All three VMI professors noted that another important reason to engage science students while they are young is the need for

more people in the STEM fields. If they can get interested early, there is a good chance they will continue to pursue this interest later in life.

"We need them to be aware of how things work, why things work that way," said Daniela Topasna. "Maybe I will have them as colleagues [some day]."

While reaching the children is important to all three professors, they also see a higher purpose in days like Sunday.

"For me, personally, I like to be involved in the community," said Gregory Topasna. "It gives you a sense of purpose. I think being involved in the community is important. The reward is really big."

"I've found that outreach is the best way to get kids excited about chemistry," Bantz said. "I think it's important for every science department and everyone involved in STEM education to be involved in it, to get this age exposure to scientists of all different genders and every [branch of science]. Everybody can be a scientist."

"It's being part of the community," Daniela Topasna concluded. "Hopefully, they will be attracted to go into STEM fields. We need more days like this."



A hands-on activity to make a Silly Putty-like compound led by Maj. Kyle Bantz gives participating children an introduction to polymer chemistry. – VMI Photo by Stephen Hanes.

POST BRIEFS

Chemistry Professor Presents at Entomology Conference

Col. Tappey Jones '70, professor of chemistry, attended the 25th International Congress of Entomology, held Sept. 25-30 in Orlando, Florida. At the conference, he attended a talk given by his daughter, Anne Jones, who is a graduate student in the research group of Jim Tumlinson '60. Tumlinson is professor of entomology at Pennsylvania State University and

a member of the National Academy of Sciences. Tappey Jones was also a co-presenter on two presentations, one having to do with the venoms of Central American ants and the other with the pheromone of a very destructive invasive beetle species. This year's International Congress of Entomology attracted more than 7,500 scientists from around the world.

Biology Professors, Cadets Publish Paper

A research paper titled "Effects of Estrogen, Nitric Oxide, and Dopamine on Behavioral Locomotor Activities in Embryonic Zebrafish: a Pharmacological Study" was recently published in the journal *Toxics*. Principal authors were Col. James E. Turner '65, Reid '41 Institute Professor of Arts and Sciences and head of biology, and Col. Wade E. Bell, professor of biology. Six

cadet co-authors were also listed: Vania Murcia '17, Luke Johnson '17, and Brandon Barbery '18, and alumni Meredith Baldasare '16, Bridgette Pouliot '16, and John McKelvey '16. Some of the data for this paper was collected in Turner's senior biology research capstone course by four of the co-authors.

Longtime Deputy Superintendent to Retire

Brig. Gen. Robert L. Green '67, deputy superintendent for finance, administration, and support, will retire this month after 19 years of service.

Green began his time at VMI in the commandant's office, but his most visible accomplishments have occurred in the past decade, with the construction of Third Barracks, the Military and Leadership Field Training Grounds, and the Indoor Training Facility. Green also oversaw transformative renovations of Nichols, Maury-Brooke, Cormack, and Cocke halls.

Green developed and managed the Institute's \$85.6 million annual budget. He also led the Institute support operation consisting of more than 200 employees, providing management and daily oversight of administrative, finance, construction, engineering, contracting, food, human resource, transportation, medical, auxiliary, security, and safety operations. Management of VMI's museum system, which grew to include three facilities during his tenure, also fell under his purview.

Green also supervised VMI's engagement with state legislators, nurturing strong support for VMI through periods of economic uncertainty and contributing to the development of legislation across many areas touching higher education.

"Brig. Gen. Green's leadership, professionalism and foresight have been a hallmark at VMI for nearly two decades," said Gen. J.H. Binford Peay III '62, VMI superintendent. "He has skillfully orchestrated the allocation of constrained resources over many years to sustain excellence across the Institute landscape."

Taking up the mantle as deputy superintendent for finance, administration, and support is Rear Adm. Charles E. Smith '79.

Smith retired from a 34-year U.S. Navy career in 2013 as program executive officer for Enterprise Information Systems. In this role, he oversaw a \$2 billion portfolio of information technology projects and programs.

"Admiral Smith brings to VMI a long history of dedication to duty and responsibilities in senior management and leadership positions," said Peay. "His experience will benefit all aspects of the Institute community and the VMI post."

Smith graduated from VMI with a bachelor of science degree in civil engineering and also holds a master of science degree. He was a Naval test pilot and served in the aircraft, tanker, carrier suitability, and weapons programs. He was also deployed in support of operations Desert Shield and Desert Storm and operations Southern Watch and Continue Hope. After qualifying in the Navy's Surface Nuclear Power Program, he served as executive officer of the USS *George Washington* and deployed to the Persian Gulf.

Smith took up his new duties Nov. 1.



Rear Adm. Charles E. Smith '79



Brig. Gen. Bob Green '67, is honored Oct. 14 during a parade marking his retirement. - VMI Photo by Stephen Hanes.

National Security Minor Offers an 'In-Depth, Immersive Experience'

Just four years into its existence, VMI's national security minor is poised for growth, with popularity already so great there's a waiting list for cadets wishing to be admitted.

The minor, which was first offered in the fall of 2012, is now under the guidance of Lt. Col. Spencer Bakich, associate professor of international studies. Bakich, who taught at Sweet Briar College and the University of Richmond before arriving at VMI this fall, hopes to see both funding and enrollment grow under his leadership. An increased emphasis on cybersecurity is another goal.

"This is something I would have wanted to create," said Bakich of the national security minor, adding that he views the minor as an "in-depth immersive experience." Earning the minor involves an intensive program of study that includes not only coursework but also a paid internship and

a substantial research project, researched and written over the last two years of the cadetship.

The number of cadets admitted to the two-year minor is capped at 10 per year, largely due to funding issues. For instance, if a cadet intern's sponsoring organization doesn't pay its interns, funds must be supplied by the Department of International Studies and Political Science.

"It would be wonderful if we had the capacity to grow the program," Bakich said.

Because of the cap, and interest in the program, admission to the minor is highly competitive. It's based on an interview with a committee of international studies faculty, grade-point average, recommendations, and a demonstrated record of commitment to scholarship.

"It's the entire package that the cadet is able to bring," Bakich said.

Currently, 20 cadets are working toward the minor, and an additional

10 to 15 are on the wait list. Thirteen of the 20 are international studies majors, with the remainder representing majors as disparate as history, biology, and psychology.

"National security is inherently a multi-disciplinary thing," noted Bakich. "We take cadets from across post."

Going forward, Bakich would like to increase the number of cadets admitted to the program and continue to attract cadets from a wide mix of majors. He added that in just the two months since the academic year began, he's already fielded many inquiries from interested 3rd Class cadets.

Bakich would also like to see the minor increase its emphasis on cybersecurity – and with that goal in mind, he is planning to teach a new course on cybersecurity in the 2017-18 academic year.

– Mary Price



Isela Vazquez '19 and Guy Shelby '17 listen as Lt. Col. Spencer Bakich teaches his U.S.-China relations class. – VMI Photo by H. Lockwood McLaughlin.

Why I Give: Edward L. Matheny, VMI Police

By Scott Belliveau '83, VMI Foundation

To get an idea of just how long Lt. Edward L. Matheny of the VMI Police has been part of the VMI community, consider that, since he began working in the housekeeping department in March 1980, the Institute has had five superintendents and that the first class that matriculated when he was an employee – the Class of 1984 – graduated more than three decades ago.

In his 36 years of service, Matheny has witnessed many changes at VMI, some small and many profound. Yet, for all those changes, Matheny, who has been a member of the VMI Police since 1985, thinks the Institute has not changed in many important ways.

"I like the way it teaches honesty and integrity," he said. "You don't see much of either in today's society." He also values the Institute's role in Lexington and Rockbridge County, observing that "VMI has always been here in the community, and it is still a community leader."

On a more personal level, Matheny cherishes the many relationships that he has formed with his colleagues as well as with alumni and their families.

"My friends and colleagues were here for me when my wife passed away in 2010," said Matheny. "I still have great friends among retired members of the faculty and staff and alumni and parents of alumni, and I keep in touch with them by email on regular basis."

Matheny also gives in support of VMI – and has for many years. Describing himself as "not a big donor, but a consistent one," he said, "Giving back a few dollars each month can only help VMI, [which] has been a provider for my family and still provides for it."

"VMI always will be a great school and a great place to work, and I'm glad that I have been able to share it with great friends and great people," Matheny concluded. "I give to keep it a great place – and make it even greater."

'Cybersecurity is National Security'

Cadet, Faculty Members Learn About Cybersecurity at D.C. Conference

By Mary Price

"To preserve democracy, we need resilient cyber [security]."

That's what Col. Mohamed Eltoweissy, chair of VMI's Department of Computer and Information Sciences, has to say about the need to prioritize cybersecurity in a world that is increasingly dependent upon online systems not just to work, learn, and play, but also to manage critical infrastructure.

Along with three other individuals from VMI, Eltoweissy learned more about the urgent need to emphasize cybersecurity when he attended CyCon U.S.: Protecting the Future, a conference held in Washington, D.C., Oct. 21-23. The event was organized by the Army Cyber Institute at West Point in collaboration with the NATO Cooperative Cyber Defense Center of Excellence.

Joining Eltoweissy at the conference were Maj. Doug Wainwright '83, information technology manager for the Department of Computer and Information Sciences, Lt. Col. Spencer Bakich, associate professor of international studies, and Nicholas Celfo '18, a computer science major who plans to commission in the Army with the hope of entering the Army's newly established Cyber Command.

Their work has since been published online by the *Cyber Defense Review*.

Celfo had heard about the conference while he was at West Point – and when he returned to post, he was surprised to learn that a contingent from VMI would be attending. "It was a goal of mine to attend, but I had no idea any VMI person was attending. When I found out that out, I figured I'd try to tag along."

All four agreed that the conference was well worth the time spent away from post, and the fact that a massive cyberattack occurred during the conference only underscored the need for increased defense. On Oct. 21, much of the East Coast was hit with an Internet outage affecting popular websites for several hours.

"They spoke a lot about attribution in the cyber world, ... and [there was] a focus on international law and how countries react to things like what happened on Friday while we were there," said Wainwright. Attribution of cyberattacks to a state or nation is a difficult area where legal requirements are not clear.

Bakich said that he came away with "a much clearer understanding of how pervasive cyber affairs are and how it cuts across all matters of policy and warfare and academic disciplines." He added, "The breadth of the conference underscored the depth of the centrality that cyber is acquiring."

Eltoweissy agreed, saying, "Cybersecurity is national security." Challenges unique to cybersecurity, he added, are how to secure an inherently

insecure medium, how to define borders in cyberspace, and how to address the severe shortage of expertise in cybersecurity.

"We're not training enough and educating enough [people]," added Bakich.

To address this shortage, VMI is planning to add an interdepartmental minor in cybersecurity, tentatively scheduled to begin sometime in 2017. A state-of-the-art cybersecurity lab is likewise scheduled to open next year.

Gaining an upper hand against cyberattackers, the four learned, is not going to be an easy feat, and not only because pinpointing their exact geographical location is difficult.

"Should companies have the ability to hack back?" asked Bakich. "What if you get the attribution wrong, and you've hacked North Korea? What are the consequences of that? ... The questions are only beginning to be asked in the appropriate way."

Going forward, said Eltoweissy, much emphasis must be placed on both the security and the resilience of the nation's cybernetworks, with resilience meaning the ability of the underlying networks to reroute in case of a major blockage.

"We're coming together to attack this problem," said Celfo. "Cyber' is a small word that encapsulates a large array of things. In 2016, we're now dependent upon that sense of security and that sense of critical infrastructure. Seemingly everything that's crucial is run on these systems. If we take that for granted, the future is unthinkable and not in a positive sense."



Col. Mohamed Eltoweissy and Lt. Col. Spencer Bakich discuss the CyCon conference they recently attended. – VMI Photo by Kelly Nye.

Celfo was selected to attend the conference because he'd had an internship last summer at the Army Cyber Institute at West Point, New York. There, he and others had done research on the future of FBI cyberoperations.

November 2016

Follow VMI



facebook.com/vmi1839



[@VMINews](https://twitter.com/VMINews)
[@VMILife](https://twitter.com/VMILife)



[virginia_military_institute](https://www.instagram.com/virginia_military_institute)



VMINews.tumblr.com



youtube.com/VMIWeb

flickr.com/VMIPhotos

Cadet Tops Army List, Excels in Academics and Athletics

By Chris Floyd

The Army ROTC program at VMI has consistently performed among the top ROTC units in the country. And for the second time in a decade, one of its cadets is tops in the nation.

The ROTC Cadet Command in Fort Knox, Kentucky, recently issued its National Order of Merit list, and VMI had its fingerprints all over it, with 35 Distinguished Military Graduates, 13 of whom were ranked among the top 10 percent of the country's ROTC cadets. At the same time, two were ranked in the top 10, including John Luke Phillips '17 who was chosen No. 1.

"He's the epitome of the high-quality student, athlete, and leader that we look for in Army ROTC, as well as to represent Virginia Military Institute," said Col. Michael Wawrzyniak, professor of military science and head of the VMI ROTC program. "From a personality and leadership mindset, he's the right type of person to be recognized in this way."

While this is a tremendous individual accomplishment, Phillips, who was joined in the top 10 ranks by Blaise Boullianne '17, who stands fifth on the list, is quick to deflect the attention from himself.

"I was pretty proud that I was able to bring [recognition] to VMI," Phillips said. "Certainly, it reflects well on our ROTC program. On top of that, it reflects well on the entire Institute, the professors who have taught me, the coaches who have coached me, the staff members. ... There are a lot of good role models here, so it's an honor to represent VMI this way."

Wawrzyniak, noting that VMI's Army ROTC in 2016 had one of its "highest number of commissions in recent years," said the OML this year is not just a tribute to the cadets who fared so well, but to VMI and its ROTC program as well.

"It's great recognition for VMI and Cadet Phillips," he said. "It's a great indicator for the program. The combination of quantity and quality puts VMI right up there with the top programs in the nation."

Beginning last fall, Phillips and the more than 5,500 ROTC cadets across the country who would be eligible to commission in 2017 began the arduous assessment process to determine the OML.

According to Wawrzyniak, the list is determined by a complicated formula that encompasses academic performance, ROTC performance, and extracurricular activities, including athletics. The cadets are also subjected to three written tests, and all of these scores are compiled to rank each ROTC cadet on the Order of Merit list.

In short, the process sounds very similar to VMI's notion of the three-legged stool, a concept with which Phillips is very familiar.

"My dad taught that to me when I was a youngster," said Phillips, whose father, John S. Phillips '87, and grandfather, Thomas C. Phillips '50, both graduated from VMI and served as colonels in the U.S. Army Reserve. "He would always talk about the three-legged stool. I grew up knowing you had to have a balanced life to succeed, so I try to apply that here at VMI. It's worked out pretty well."



Luke Phillips '17 competes in the James Madison University open in September. – Photo courtesy of Don Szczepanik.

Phillips has put in his share of work, too. A double major in biology and chemistry, he has achieved a 3.97 grade point average, and he is a member of the cross country and track teams, serving as one of the team captains this fall. At the same time, he is an S2 captain, working closely with the Miller

Academic Center and the dean's office to improve the academic environment in the Corps and assist other cadets in academic success.

"He's just a grinder," said Darrin Webb, VMI's director of track and field and cross country.

"He doesn't have to demand that he's a leader," Webb continued. "The way he carries himself displays that, and it's very evident to anyone who meets him. He just kind of has it."

One of the perks for Phillips and the other VMI cadets who finished in the top 10 percent of the rankings is that they receive their first choice for the branch of the Army in which they want to serve. One might expect the science major, who is taking pre-med courses and has expressed an interest in becoming a doctor, to choose a branch that reflects that interest. So, obviously, he chose armor.

"I knew I wanted to be a ... soldier before anything else," said Phillips. "I don't know if I want to make a career of it, but I want to serve in that capacity before moving on to other things."

And whatever those things will be, for Phillips, Boullianne, and the other cadets who earned Distinguished Military Graduate honors, Wawrzyniak is sure they are going to be successful.

"I have no doubt that they are going to live up to this recognition and continue to excel in their Army journey once that starts next May," he said.



Luke Phillips '17 is recognized at the Keydet Club scholarship banquet Oct. 8. – VMI Photo by John Robertson IV.

Cadre Prepares for New Cadet Military Training

By Kelly Nye

A group of cadets began planning earlier this semester for the training 4th Class cadets will receive after the Rat Line. The cadets, who will be cadre for New Cadet Military Training this spring, gathered at North Post and McKethan Park Oct. 15-16 for a basic instructor course, after which they separated into groups to train in specific disciplines: first aid, weapons, military and survival skills, and land navigation.

The NCMT program is an opportunity to teach cadets “common basic tasks” that every soldier must know, said Sgt. Major John Neel, Corps and Institute sergeant major.

The program was the idea of a Swedish cadet named Magnus Nordenman '02. Back in 2001, “[Nordenman] put forward this idea to the commandant and the superintendent at the time, Col. [Eric] Hutchings and Gen. [Josiah] Bunting, that we start a military training program that was the same for everybody across the Corps of Cadets,” explained Neel.

At the time, making the program a cadet-run initiative was simple. There were several veterans who had been deployed to Iraq and Afghanistan and had returned to VMI to complete their cadetship. Those cadets became the first NCMT cadre.

“They had good credibility, instant credibility,” Neel reflected. “Then, once those rats

were trained that first year and later became first classmen, they were totally sold on the program.”

Back then it was possible for cadets to complete their cadetships without ever having fired a weapon.

The NCMT program changed that.

Through the NCMT program, all cadets spend at least three days in the woods in a field training exercise – building poncho shelters, sleeping outside, finding their way from point A to point B, and eating rations. They also spend time in the North Post firing range learning how to handle and shoot rifles.

The NCMT cadre must be prepared to teach the required skills and safely lead the new cadets through the FTX. After the cadre “train the trainers” event in the fall, training continues at various times throughout the academic year.

Cadets joining the cadre learn from older cadre members under the oversight of Sgt. 1st Class Chris Bean and Sgt. 1st Class Carmelo Echevarria, members of the commandant’s office training staff. They learn everything



NCMT cadre member Rush Earman '18 demonstrates how to disassemble a rifle during the weapons training segment of the Oct. 15-16 train the trainers event. – VMI Photo by Stephen Hanes.

from speaking in front of large groups as instructors to the basics of their discipline, which for the weapons training includes assembling and disassembling rifles. Special attention is paid to the rifle discipline for safety reasons.

“I think the big leap in maturity comes between 2nd and 1st class year,” said Bean. “We try to develop them as they progress,” he continued. “I’m surprised that we can take a group of 19-, 20-, and 21-year-olds and have them teach other people how to use firearms safely. ... But we’ve grown to trust these cadets because we’ve trained them from 4th Class.”

Lukas Snear '17, this year’s NCMT cadet in charge, for instance, has experience with every discipline of the training. In his 4th Class year he was the designated land navigator for his squad, last year he was the cadet in charge of first aid, and this year he is also cadet in charge of the club three-gun team.

Snear, who may commission into the Marine Corps after graduation, is pleased to have had the additional training provided by NCMT. He notes the value of the training especially for those cadets not planning to commission.

“I love everything about NCMT,” he said. “My favorite part ... is without ...[it] you’re not really getting the soldier part of the citizen-soldier.”

This year, 4th Class cadets will complete NCMT classes April 8-9, a range day April 22, and FTX the week before graduation, May 11-13.

To see more photos, visit VMINews.tumblr.com, post date Oct. 17.



Sgt. 1st Class Chris Bean demonstrates improvised first aid techniques with Maxwell Horowitz '19 during NCMT cadre training. – VMI Photo Stephen Hanes.

Seeking Cures for People, New Life for a Rain Forest

Microbiologist Works with Amazon Tribe to Understand Traditional Medicines

By Mary Price

Lt. Col. Emily Lilly is doing research that could change lives on two continents – and help slow destruction of the Amazon rain forest, one of the Western Hemisphere’s most pressing challenges.

Lilly, who is associate professor of biology, traveled to Ecuador in May to spend a week with members of the Quichua tribe, an indigenous people living on a reservation near the headwaters of the Amazon River. Tribe members, Lilly explained, are desperately trying to rebuild the rain forest through reforestation.

“Without the forest, they have nothing,” said Lilly. “It’s the center of their religion. It’s the center of their social life. It’s the center of their health and well-being.” Perhaps most importantly, she added, the rain forest produces the native plants that are the cornerstone of the traditional medicine of the Quichua, a people who seem to suffer from few of the ills that plague Americans.

“Their people are amazingly healthy,” said Lilly of the Quichua. “On a reservation of 400 people, no one has cancer. No one has diabetes. It’s unheard of in their culture.”

Because of the rainforest’s importance, the Quichua are seeking to make money so they can buy more land for their reforestation efforts. To make money, they need to produce viable exports.

“They’re looking to export the kinds of things that the Western world would want,” Lilly explained.

The Quichua’s traditional medicines, some of which may fight cancer or offer a solution to the problem of antibiotic resistance, could be lucrative exports. But first, the Quichua need objective, scientific proof that these medicines are both safe and effective, and that’s where Lilly, with her background in microbiology, comes in.

In the lab at VMI, she’s currently testing the soil samples and plant extracts she brought back for evidence of antimicrobial compounds. “A lot of research ... indicate[s] that the microbes in the Amazon are unique,” she said. In the case of antibiotic resistance, the plants in the Amazon just might be a magic bullet because they’ve been used successfully to treat infections for centuries.

For the Quichua, Lilly’s research will be a vital first step toward determining what actually makes their medicine work. “I can help them determine which component of this healing ceremony is actually [making a difference],” said Lilly. “Is it the plant? Is it the exercise you’re making them get by climbing to the top of the mountain? What’s going on?”

Gaining approval of the U.S. Food and Drug Administration for a new pharmaceutical can take years of work, Lilly explained,



Lt. Col. Emily Lilly works in her VMI lab to test extracts from plants she brought back from the Amazon. – VMI Photo by John Robertson IV.

not to mention significant funding, but it’s possible that a rain forest plant extract could be sold as a cosmetic or an herbal supplement, as neither of these is as heavily regulated.

Lilly is also helping the Quichua with a more altruistic goal: giving back. The tribe would like to create a program for Western college students in which the students would come for one to two weeks to learn about rain forest medicine and participate in the reforestation efforts. While she was there, Lilly helped with curriculum development for such a program.

“They wanted me to help them make it attractive as a foreign exchange program,” she explained. “What would it take for them to make it something that universities would give credit for?”

In this endeavor, however, Lilly faces a not-so-small problem.

“Sadly, none of them speak English,” she said. She explained that while the younger members of the tribe speak Spanish, the elders refuse to speak that language, as it came from the conquistadors. Older members of the tribe speak their tribal language. While she was in Ecuador, Lilly learned a few phrases in Quichua, but she mostly spoke Spanish, a language she was already fluent in.

Since her return to the United States, Lilly has made tentative plans to take a group of cadets to the Quichua reservation, most likely in the spring of 2018. The cadets would be urged to learn some basic Spanish before they departed, but Lilly acknowledged that



Spiders and their webs are valued by the Quichua for their role in controlling mosquitoes and, thus, malaria. – Photo courtesy of Lt. Col. Emily Lilly.



Lt. Col. Emily Lilly and members of the Quichua tribe gather herbs used in traditional medicines. – Photo courtesy of Lt. Col. Emily Lilly.

she could serve as interpreter as needed. Lilly’s plan would involve a four-week course, with two weeks spent preparing on post and two weeks in Ecuador.

“They really need to learn a lot about the culture and the basic biology,” she said. “How does the rain forest work? Why is reforestation important? That’s the kind of stuff we can teach them here.”

The cadets’ experience on the ground would then complete the learning, and, with any luck, they’d have their own epiphanies about life in another culture, just as Lilly did herself.

For example, when Lilly arrived in Ecuador, she learned quickly that an entire species of large spiders is considered sacred, and no one destroys the spider webs that are everywhere on the reservation. After a few days, she realized that the “sacred spider” lore wasn’t grounded in myth, but in fact. There are no mosquitoes, and thus no malaria, on the Quichua reservation because the spiders trap and eat mosquitoes.

“It’s an amazing example of natural pest control,” she noted. “There’s a lot culturally to be gained by being there.”

Cocke Hall *continued from page 1*



New exterior surfaces and a restored Memorial Garden mark the newly reopened Cocke Hall. – VMI Photo by John Robertson IV.

Despite the many changes, the building retains its classic feel. The layout of the ground-level courts and upper-level track remain largely unchanged, but both were upgraded with new flooring.

Likewise, the much-loved weight room on the 200 level retains much of its character, with most of the space still devoted to free weights and the open nature of the entire level intact.

As many architectural features as possible were restored rather than replaced, for the purpose of both preserving the historic nature of the building and reducing waste.

Environmental impact was a priority for the project, which was built to LEED

Silver standards. Two 10,000-gallon cisterns were installed below ground to collect rainwater for use in the building’s mechanical systems and for watering Memorial Garden.

LED lighting is in place throughout the building, and decentralized heating and cooling systems were installed to contribute to energy efficiency.

“The beauty of those systems is that they provide more localized heating and cooling,” said Thompson. “These will individually cut on and off depending on the needs of each area.”

Sourcing and disposal of construction material also contributed to reducing the construction’s environmental impact.

“They separated out the debris for recycling, and building materials sourced from a certain radius of the building site contributed LEED points,” said Col. Keith Jarvis ’82, deputy director of construction.

Changes made throughout the building to improve accessibility and safety include handrails in the stairwell and around the track as well as the installation of an elevator.

Scaffolding surrounding the building throughout the construction process was evidence of the removal and replacement of exterior surfaces, which alone accounted for \$1.3 million of the project.

The renovation project also included the beautification and restoration of Memorial Garden.

A new monument honoring those who have served the Institute now stands across Memorial Garden from and complements *The Spirit of Youth*, the marble figure located beside Jackson Memorial Hall, which was restored last summer. New lighting built into the garden’s architecture will illuminate the memorials and monuments at night.

The significance of the building to the Corps and its importance in fostering the VMI spirit was not lost on the building’s designers.

The central entryway features a quote from Brig. Gen. William H. Cocke, 1894: “Victory and Defeat will come and go with the seasons, but the VMI Spirit will always be the same.”

Campaign for VMI Continues to Draw Strong Support

By Scott Belliveau '83, VMI Foundation

An Uncommon Purpose: A Glorious Past, A Brilliant Future: The Campaign for VMI is continuing to draw generous support from the VMI community. As of the end of September, 14,410 alumni, faculty, staff, and friends had given \$302.2 million in gifts and commitments.

“Even a country with our prestige and power, with our technological prowess and vast wealth, will not long remain prosperous and powerful if it lacks leaders of character and integrity – men and women who will consistently place personal honor and the public good above personal gain,” noted Donald M. Wilkinson '61, campaign

chairman. “Since 1839, the Institute has produced that kind of leader by developing both the character and the intellects of its cadets.

Wilkinson added that he is grateful for this generosity, which ensures VMI will have the resources to continue its mission.

Brian S. Crockett, VMI Foundation CEO and campaign chief operating officer, pointed to the efforts of Gen. J.H. Binford Peay III '62, VMI superintendent, and the campaign's volunteer leaders, but attributed “the lion's share” of credit for the campaign's success to the donors.

Electrical Engineering *continued from page 1*

interests. What's more, the old curriculum wasn't keeping up with an ever-evolving field that encompasses two disciplines: electrical engineering and computer engineering.

“The discipline demands [flexibility],” said Addington. “The discipline is changing so frequently that [with] a rigid curriculum it's very difficult to keep pace with those changes.

“Now we can roll with the discipline and make sure our program of study stays up to date.”

The changes encompass all levels of instruction, from the required courses for 4th Class cadets to the upper-level electives offered to 2nd and 1st class cadets. Incoming 4th Class cadets this fall are taking two new required classes: Introduction to Electrical and Computer Engineering and Computer Tools in Electrical and Computer Engineering. A third course now required for 4th Class cadets, C Programming, has been moved from the 3rd Class year.

Col. David “Dave” Livingston, who's teaching this year's introductory class, explained that the shift to a traditional introductory course comes after years of a more unconventional approach in which the introductory class met five days a week, with a different professor assigned to teach each day. That approach, Livingston noted, exposed 4th Class cadets to a wide range of topics within the discipline, but it also resulted in a loss of continuity as the cadets only saw each professor once a week.

The decision was therefore made to return to a traditional introductory class, with an emphasis on introducing departmental expectations, such as lab reports, while also showcasing the wide variety of sub-disciplines in the field.

“We want to make it interesting enough for them to be motivated to stick with it,” Livingston commented. “We want to get them involved in our department early on.”

The computer tools class, taught by Col. Jim Squire, professor of electrical and computer engineering, is also a vital part of getting cadets involved early on. It introduces cadets to designing, building, and analyzing electrical circuits with the aid of Matlab, a computer programming language, and Spice, a general purpose circuit simulator.

“The more they're exposed to our program in the very first semester, the better,” Livingston noted. “That will help with retention.”

Upper-class cadets, meanwhile, have found their elective choices quintupled, expanding from four to 20. Among the many new offerings is optoelectronics, which Addington is teaching this fall. The department head noted that because of the rigidity of the earlier curriculum, this is the first time he's had the chance to teach optoelectronics, though it's been a research interest of his for the entire 20 years he's been at VMI.

The optoelectronics class, in which seven 1st Class cadets are enrolled, explores topics at the intersection of optics and electronics, among them solar cells, LEDs, and fiber optics.



Fourth Class cadets (from right) Reed King, Matthew Blaser, Rebecca Browning, Jasmine Mann, James Granderson, and David Chewning load programs into their robots' microcontrollers before testing their ability to autonomously drive in the lab. – VMI Photo by H. Lockwood McLaughlin.

Additional elective offerings planned include a course on intelligent machines, to be taught in the spring by Livingston, and another on project management, to be taught in the spring by Col. Dan Barr '74. New courses planned for the 2017-18 academic year include the Internet of Things, to be taught by Col. Mac Baker, and a class on engineering entrepreneurship, to be taught by Squire.

These courses, and other new electives within the department, aren't just designed for cadets majoring in electrical and computer engineering. Addington explained that while the approximately 60 cadets majoring in the discipline will always get their first pick of classes, the courses are open to non-majors as well. In the past, non-majors seeking to take a course in electrical and computer engineering often found their plans thwarted by prerequisites. Those prerequisites have been removed.

To see more photos, visit VMINews.tumblr.com, post date Oct. 12.

On Video Conferencing App, Cadets Practice Spanish

By Mary Price

Jack Flynn '18 is so motivated to learn Spanish that the summer after his 4th Class year at VMI, he took a sweaty, dirty job working in landscaping, just so he could be around native speakers of that language.

But the summer job ended, as all summer jobs must, and Flynn found his hard-earned conversational skills slipping. Enter Boomalang, a software program that pairs up Americans who want to learn Spanish with native Spanish speakers who want to learn English, and Flynn is once again making progress toward his goal of fluency.

Flynn, and the other 28 cadets enrolled in Col. Mary Ann Dellinger's Spanish composition and conversation class, have been using Boomalang this semester to improve their speaking skills. Cadets first fill out an extensive interest inventory online and are then paired with conversational partners who share their interests. Conversations take place in real time via video conferencing.

Most of the conversational partners come from Latin America, although Dellinger, who is professor of modern languages and cultures, has contacts in Spain and would like to add in native speakers from that nation.

Dellinger explained that her class's use of Boomalang came about after Chris Gerding, owner and developer of Boomalang, found an online post that she had written on a listserv maintained by the American Council of Teachers of Foreign Languages. Gerding emailed Dellinger over the summer to see if she would help him fine-tune Boomalang, as the program is very new. Dellinger consulted with Gerding about the kinds of things professors would want to see in the program.

From there, it was an easy decision for Dellinger to adopt Boomalang in place of the online program she'd been using before for Spanish conversation.

Boomalang is a real-time program. Dellinger noted that the face-to-face nature of Boomalang forces cadets, as well as their conversational partners, to rely on the words they know rather than taking the time to consult a dictionary or grammar chart.

"It doesn't matter if you can conjugate the verb 'to drink,'" said Dellinger. "You're going to have to be able to [ask for a drink in a restaurant]. Whether or not you say it grammatically correct doesn't matter, because it's communicating."

So far, aside from a few technical difficulties, the cadets' use of Boomalang seems to be meeting the goal of developing fluency.

"It's hard to practice conversationally here, because we all speak English," noted Flynn. "It's been very helpful ... because you have someone on the other end who can correct you and who understands the situation because they're in the same boat."

As of early October, Flynn had managed to have two conversations via Boomalang, one with a college student in Colombia and another with a high school sophomore in Monterey, Mexico. The conversation with the Colombian ended abruptly when the audio suddenly gave out, but Flynn was able to complete his conversation with the Mexican student.



Cadets in Col. Mary Ann Dellinger's Spanish composition and conversation class try to connect with a Spanish speaker using Boomalang. – VMI Photo by Kelly Nye.

"He and I had a pretty good conversation back and forth," said Flynn. As Dellinger had warned him and the other cadets, though, Flynn has found that his conversational partners are more advanced linguistically than he is. "They're usually better at speaking English than we are at speaking Spanish," he explained.

Despite the technical difficulties, and the challenge of truly mastering another language, Flynn persists because he's certain Spanish will help him out with his career goal. "I want to go into law enforcement, and given the rising number of Spanish-speaking immigrants in this country, I feel it would be a helpful [skill] to have under my belt."

Parents Weekend Victory

Families stroll through Jackson Arch as rain extends barracks tours and keeps tailgating off the Parade Ground during Parents Weekend Oct. 7-8. The day brightened as the Keydets won the football game against East Tennessee State University 37-7. – VMI Photo by Kelly Nye.



NON-PROFIT
ORGANIZATION
U.S. POSTAGE
PAID
PERMIT NO. 14
LEXINGTON, VA
24450-0304

Podcast Series Showcases VMI Faculty

VMI's Office of Communications and Marketing has launched a new effort to showcase the VMI faculty's expertise and contributions to their disciplines and to the community. These projects are featured prominently on the home page of the VMI website under the header "Focus on Faculty." Individual pages may be accessed at www.vmi.edu/news/focus-on-faculty.

"The genesis of this initiative was our growing recognition over the last couple of years that VMI faculty members are doing some amazing work that deserves to be seen by the wider world," said Col. Stewart MacInnis, director of the office. "Our challenge was in figuring out how to tell the story of the complexity and depth of that research, service, and scholarship in formats that are easily understandable. We soon realized that we needed a variety of technologies and formats to draw from based on the unique aspects of the faculty member's work."

A key component of this effort is a new podcast series, VMI Voices, in which members of the VMI faculty bring their perspectives to bear on topics of general interest, such as Zika and the politics of public health (<http://bit.ly/VMIVoiceszika>) and how the U.S. defense budget shapes U.S. foreign policy (<http://bit.ly/UnholyTrinity>). Readers may subscribe to the monthly series at <http://vminews.libsyn.com/rss> or by visiting Google Play or iTunes and selecting VMI Voices.

Other pages use multimedia presentations to highlight faculty projects, such as research to preserve bat populations by Maj.

Paul Moosman, professor of biology (<http://bit.ly/MoosmanBats>). Faculty may also join in public discourse via op-ed pieces, such as one by international studies department head Dr. Jim Hentz on fighting in Nigeria instigated by Boko Haram.

VMI faculty are encouraged to contact Maj. Sherri Tombarge (tombargesk@vmi.edu) if they have a project they'd like to see featured or if they'd like to write an op-ed or participate in a podcast. Anyone may contact Tombarge if they have a topic they'd like to see addressed through a faculty podcast or op-ed.



Col. Atin Basuchoudhary, professor of business and economics, and Col. Wade Bell, professor of biology, record a podcast with Maj. Sherri Tombarge. – VMI Photo by Kelly Nye.