

## **EKU team participates in National Collegiate Cyber Defense Competitions**



*National Collegiate Cyber Defense  
Competition Logo*

On February 10th, 2024, Eastern Kentucky University's (EKU) Collegiate Cyber Defense Competition Team participated in the annual National Collegiate Cyber Defense Competition's (CCDC) local competition. These competitions have been held remotely since 2020.

In the competition the colleges teams are designated as the "Blue" team and are responsible for maintaining their servers against attacks

from a team of professional computer hackers designated the "Red" team. Points are scored through a combination of successfully defending against the attacks, maintaining server "up time", and

documenting the attacks and any weaknesses in the defending teams.

The Department of Computer Science and Information Technology-based Team, competed in a field of 15 colleges and universities which included teams from Ohio, Michigan, Iowa, and Kentucky. EKU's team ranked second amongst all teams in defending against the Red team's attacks and ranked third among teams from Kentucky overall, after teams from the University of Louisville and Northern Kentucky University.

Because of these achievements, the team advanced to the CCDC Regional Wildcard competition which was held on February 24th. EKU competed against the 2nd and 3rd ranked teams from Ohio, Michigan, Iowa, Kentucky, Indiana, Minnesota, Illinois, Wisconsin, and Missouri. Again, the EKU team excelled, placing first in the category of defending against cyber-attacks, and finishing 3rd place overall amongst the 18 competing teams.

Dr. Shuangteng Zhang, Professor in the Department of Computer Science & Information Technology & Director of the Digital Forensics and Cybersecurity Institute serves as the faculty liaison to team. He had this to say about the team's performance, "We did very well this year and I believe our team can go further next year if we continue to improve our skills and learn to respond to injects better."

EKU's CCDC team was formed in 2019 and has participated in the competition qualifier in 2019, 2020, 2023, and 2024. The competition was not held in 2021 or 2022 due to the COVID-19 pandemic. The team also participated in the 2019, 2022, and 2023 CCDC Southwest regional invitational competitions as well as the 2023 and 2024 wildcard qualifier competition.

EKU's 2024 CCDC team consisted of Messrs. Quentin Patterson, Christian Kent, Logan Jackson, Vladimir Murray, Sam Burton, David Barnett, Tate Wilson, Wilkinson, and team captain Ms. Raven Dean.

When asked about her experience at the competition Ms. Dean, a senior majoring in Computer Science, said, "This year's competition was really fun, our team performed well at both of the competitions, and our skills really matured from last year's competition and I'm really proud of them."

Mr. Patterson, also a senior majoring in Computer Science, recalled the sometimes frantic pace of the competition: "There's a lot of downtime between the network attacks where you work on your machine and write documents about the attacks to earn points but then someone will shout across the room that their system is under attack and 3 or 4 people will run over and work together to stop the attack. No matter how much you think you know, the team always knows more, and I'm glad to have had a great team to work with during the competition."



EKU CCDC Team Captain: Ms. Raven Dean

More information about ECU's Computer Science and Information Technology programs can be found at <https://www.eku.edu/csit/>.

## FACULTY/STAFF AND STUDENT SPOTLIGHTS

### Ms. Aida Bermudez



Ms. Aida Bermudez

Ms. Aida Bermudez was born in Queens, New York, and grew up in Miami, Florida, where she graduated from Miami Coral Park Senior High School. She is a first-generation college graduate and her mother immigrated from Peru and her father from Colombia.

Ms. Bermudez received her bachelor's degree in physics from Florida International University in Miami. She had always liked astronomy and physics. However, Florida International University did not have an astronomy program, so she and another student were highly involved in bringing the astronomy minor to the program.

In 2015 Ms. Bermudez was working in a Planetarium in Miami, but it was being closed. She indicated, "I took it as a sign to move from Florida. I applied to different planetariums to see what would come up, one of them being the Hummel Planetarium at ECU. I got the position and came to Kentucky to see it before moving. It was different but felt awesome to be in Kentucky and felt like it was the place to be." In October 2019 she became the STEM Recruitment and Outreach

Coordinator for the College of Science and recently became College of STEM (CSTEM) Enrollment Counselor under Enrollment Management.

She is currently enrolled in the Master of Science in Instructional Design and Learning Technology degree program here at Eastern Kentucky University (EKU). When asked what inspired her to take this step, Ms. Bermudez stated, "I took a long time to figure out what I wanted to do for my master's program. In 2020, COVID-19 affected everyone, and I saw how hard it was to teach online, and as the STEM Recruiter how hard it was to get information to the students. One day, I found the Instructional Design program at EKU. I realized that there are proper ways to conduct training online for people to learn. I saw how all this can be beneficial in how to get information across these days."

When asked what she likes most about EKU and her job, she replied "I like that I can help high school students find their path whether that is at CSTEM, EKU, or somewhere else. Many students think they know their path or have no idea what their next steps are. I like to be able to guide them and show them majors or careers they had no idea existed. I like to provide the guidance I wish I had when I was a freshman." Her greatest job satisfaction has been to "...spark the love of science in students" as Planetarium Educator, Program Specialist for the Division of Natural Areas, and Camp Director for the CSTEM Summer Camp. "It is great to be able to take it a step further and let them know what career goes with what they are enjoying during the activity or field trip. With summer camp, I have been able to make bonds with prospective students and then see them as EKU students. It has been great to be able to help them as EKU students as well."

Ms. Bermudez lives in Berea, Kentucky, with her husband, Mr. Tyler Shortridge. In her free time, she enjoys watching crime shows with her favorite being NCIS. She also loves Harry Potter and Disney. In the warm months she likes to garden.

### **Student Spotlight: Mr. Travis Herndon**

Mr. Travis Herndon is an Eastern Kentucky University (EKU) sophomore from Henderson County, Kentucky. He joined the FFA (Future Farmers of America) organization in high school and found his love for agriculture. He is pursuing a Bachelor of Science degree in agriculture with a concentration in fruit, vegetable, nursery, and greenhouse production.

Mr. Herndon's interest in agriculture was also inspired by his parents and high school advisors as he explained, "My parents always let me experiment with different gardens and flower design pots. They also let me turn our house into practically a greenhouse. In addition, my advisors from high school, Mr. Payne



Mr. Travis Herndon

and Mrs. Lancaster, really got me involved in the school greenhouse and sparked my passion for growing things.”

“When my senior year in high school was concluding, I toured Eastern Kentucky University and fell in love with the landscape and atmosphere.” He enrolled at ECU in the fall of 2022.

At ECU, Mr. Herndon is involved in several clubs including the Shotgun Team, Pistol Club, Horticulture Club, Agriculture Club, and the Delta Tau Alpha Agriculture Honors Society. He also attends Baptist Campus Ministry bible study and started his own bible study group out of the Carter (Agriculture) Building. Since joining ECU, he has been on the College of STEM Dean's list each semester. He also earned the dean's award and president's award in Fall 2023.

Mr. Herndon also works part time for the ECU Agriculture Department in the Greenhouses. This experience has allowed him to get firsthand experience in his major and he expressed gratitude to his supervisor, “I would like to thank my friend and supervisor here at the ECU greenhouses, John Duvall, for helping me grow into a better horticulturist.”

When asked what he had learned most from ECU Mr. Herndon replied, “So far what I feel I have learned the most from Eastern is making the most out of everything and learning from every mistake. I have enjoyed all my time here at Eastern and all the friends that I have made.”

After graduation, Mr. Herndon hopes to work for the state of Kentucky as either a 4-H extension agent or a horticulture extension agent.

## ALUMNI AND FRIENDS

### Mr. James Matthew Christie



Mr. James Matthew Christie

*“Just because it looks like other people are breezing by doesn't mean they're not struggling too, it can really help you to calibrate your expectations of yourself. Don't be afraid to fail at things! Science is built on top of failures that change how we look at the world.” - Mr. James Matthew Christie*

Mr. James Matthew Christie obtained a B.S. degree in physics, with minors in mathematics and chemistry, from Eastern Kentucky University (EKU) in 2018 and a M.S. degree in physics from the University of Tennessee, Knoxville (UTK) in 2021.

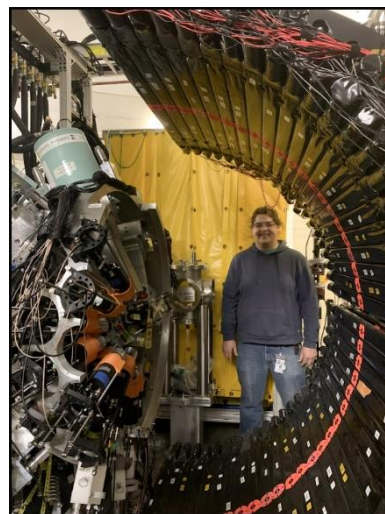
He is currently working as a graduate research assistant at UTK while pursuing a Ph.D. in physics exploring the boundaries of our understanding of the nuclear strong force by studying how exotic atomic nuclei break apart to reveal the underlying structure of the nuclei.

Mr. Christie was born in Campbellsville, Taylor County, Kentucky, and was drawn to ECU by the university's biochemistry program and a cost of attendance that was more reasonable than other nearby institutions.

He received a transfer scholarship at ECU and was also employed as a student worker through the institution's work study program. "These two sources of financial support meant the difference between being able to afford school or having to drop out or take on an excessive load of student debt," he said.

He changed his major from chemistry to physics in the spring of his junior year as he explained, "I was a chemistry major up until the fall of my sophomore year and I kept coming back to the question of 'why', rather than the 'what' of the material I was studying. I wanted to understand how things worked at a more fundamental level, and I found that 'why' in physics."

While at ECU, Mr. Christie conducted undergraduate research projects under the supervision of Dr. Marco Ciocca, retired professor of physics, and Dr. Thomas Jarvis, assistant professor (now associate professor) of physics. These experiences prepared him well for his Ph.D. research. "My undergraduate research helped get me familiar with a big range of vacuum equipment that I regularly use for my ongoing research. It also helped familiarize me with some of the tools of laser spectroscopy, which I occasionally still use," he said.



Mr. Christie at work in the lab

Mr. Christie has many fond memories of ECU including:

- "Having long philosophical discussions about anything and everything with the other tutors in the math and physics departments. Some of us still meet up occasionally."
- "Professors almost always had an open-door policy, you could just drop by and hang out and chat, and it really made for a much more welcoming environment than I've seen in many places."
- "By the time I graduated, Richmond felt like home to me, I still enjoy coming back to visit my old haunts. I've even occasionally been known to find a desk to study or work at up in the stacks of the ECU library while I've been in grad school."
- "Meeting my wife, Love Christie, we just never stopped talking."

When asked about what advice he would give to current students aspiring to major in physics, Mr. Christie responded, "Make connections with your peers! Having people to commiserate with while you're studying or doing homework with makes it so much easier to move forward. Just because it looks like other people are breezing by doesn't mean they're not struggling too; it can really help you to calibrate your expectations of yourself. Don't be afraid to fail at things! Science is built on top of failures that change how we look at the world."

### Ms. Jessica Mayes



Ms. Jessica Mayes

*"Take a variety of classes to see what interests you most. And go ahead and take advanced classes if you can – it never hurts to be overqualified, but it's hard to make up ground later on if you need to fill in gaps." - Ms. Jessica Mayes*

Ms. Jessica Mayes is a Corporate Metallurgist at Lexmark International in Lexington, Kentucky, where she has worked since 2001. Her team is responsible for all the metals, ceramics, and electronics in their printers and other adjacent products.

"I am responsible for helping other engineers and designers pick the best metal, ceramic, or electronic material on the basis of function, cost, and other factors like availability and sustainability. I am also responsible to make sure the drawing correctly calls out the material based on specs and engineering standards so that the supplier can make it correctly, although in many cases they are in another part of the world," explained Ms. Mayes.

Her team also helps with failure analysis if a material has issues either during testing or later in the field. In order to make sure their products stay competitive, they continue to help after a product is released with cost reductions and design improvements, including suggestions to make assembly easier or faster and make sure recycling and end-use is efficient and sustainable.

Ms. Mayes holds a B.S. degree in metallurgical engineering degree (1991) and M.S. degree in Materials Engineering (1999) both from the University of Kentucky.

Prior to joining Lexmark International, she worked in a metal foundry and automotive manufacturing. Experiences, both good and bad, in these industries were very important in helping her decide the direction she wanted her career to take as she moved up the ladder. "No matter where I was working I wanted to learn as much as I could, both technically and personally, which helped me make the best decisions I could later on," she said.

Ms. Mayes is an avid advocate for the recently launched B.S. in manufacturing engineering program at Eastern Kentucky University (EKU). The program, which is housed in the College of Science, Technology, Engineering, and Mathematics, is EKU's first engineering program and the only manufacturing engineering program in the Commonwealth of Kentucky. Ms. Mayes supports the program through advocacy, philanthropy, and service. She is a member of the Engineering Advisory Board in the Department of Engineering and Technology. The Board is made up of industrial partners who help the faculty understand emerging industry needs that should be considered when developing curriculum and, working on the professional development of students. It also advocates and supports the department, providing helpful feedback on the department's strategies and performance.

One motivating factor for Ms. Mayes to be engaged with EKU is her family ties with the university. As she explained, "My family is originally from the Letcher County and Owsley County communities of eastern Kentucky and several of my family members are EKU graduates, including my father, Jesse Mayes, who attended EKU from 1963 through 1965 and double majored in Physics and Math, as well as an aunt and uncle who also majored in the sciences. These degrees and their experiences at EKU were a critical and solid base for their families."

She is most motivated to be involved with EKU because of the university's mission. "I strongly support the mission of EKU and all that EKU brings to the region. I am also involved with STEM education in other venues (such as Upward Bound) and see the value EKU puts on first-generation students and the support EKU gives these families. I enjoy being part of an educational structure that has such an encouraging community of students, faculty, staff, and alumni," she said.

For current students aspiring to major in STEM disciplines, Ms. Mayes offered the following advice:

- "The Sciences, and Engineering specifically, incorporate vast and diverse subjects. Take a variety of classes to see what interests you most. And go ahead and take advanced classes if you can – it never hurts to be overqualified, but it's hard to make up ground later on if you need to fill in gaps."
- "Also participate in co-ops, internships, and work opportunities to see first-hand what the day-to-day work is like. Talk to people working in the field to see what they like and don't like about their job, company, and career path. Consider managers and individual technical contributors, as well as people who are working tangent to the mainstream in areas like finance, supply chain, program management, and analytics."
- "Join networks of professional societies and social groups and try to find mentors who can help you grow when you have questions or challenges. It's helpful to seek a lot of variety in jobs early on in order to know what's available and what you like."

College of Science, Technology, Engineering, and Mathematics Alumni Newsletter  
May 1, 2024

- Maybe most important, make sure you are doing something you really enjoy, or at least that you like and affords you to do things you enjoy, and uses your skills in a variety of ways that keep you engaged and interested in lifelong learning. Remember you are learning and using skills that can help in your family, community, and throughout your life – not just your ‘job’.”

Ms. Mayes was born and raised in Lexington, Kentucky. She serves on several nonprofit boards and volunteers with groups including animal shelters, philanthropic causes, and serves as a Director with the Kentucky State Beekeepers Association. She lives with her husband, Byron Bell, on a small farm in Bourbon County where they foster animals, grow pumpkins and a big garden, and keep about 25 beehives. They also enjoy woodworking and creating glass and metal art.

#### UPCOMING EVENTS

##### **Spring Commencement**

Friday, May 10, 2024, 9:00 am

Alltech Arena at the Kentucky Horse Park

4089 Iron Works Pkwy

Lexington, Kentucky 40511