CSTEM ALUMNI NEWSLETTER

November 1, 2022

CELEBRATION OF STEM WEEK 2022

Eastern Kentucky University's 2022 Celebration of STEM (Science, Technology, Engineering and Mathematics) Week was held from Monday, September 12 through Saturday, September 17.

"The Celebration of STEM Week is an opportunity for us to highlight STEM programs at EKU by showcasing our state-of-the-art Science Building and other facilities; the dedication and excellence of our faculty, students, and staff; and ongoing engagement with alumni, donors, retired STEM faculty, local high schools, and the community at large," explained Dr. Tom Otieno, dean of EKU's College of STEM.

The College celebrated its alumni by hosting its annual Alumni Lecture Series on Monday, September 12. The lecture is designed to honor alumni who have distinguished themselves and the college through their professional accomplishments. This year's speaker was Dr. Kelly Carter, a data scientist with Consolidated Analysis Center, International (CACI) Incorporated, where she supports US national security sector clients and is an NCAA Division I coach for the North Carolina State University Rifle Team.

Dr. Carter holds a B.S. degree in mathematics from EKU, a Ph.D. in business with a specialization in homeland defense from Northcentral University, and an M.S. degree in strategic studies from the US Army War College.

Dr. Carter was presented with the College of STEM Award, which is given to people who have made impactful contributions to the College and is the highest award that may be given by the college. Dr. Lindy Dejarme, a lead space engineer at Battelle Memorial Institute, also received the College of STEM Award at the same event. Dr. Dejarme has been a strong supporter of the college through philanthropy and service. For more information regarding Drs. Carter and Dejarme, visit EKU Stories.

The keynote address of the Celebration of STEM Week was delivered on Thursday, September 15 by Dr. Thomas J. Misa, a retired professor of the history of technology at the University of Minnesota. This address was also part of EKU's Chautauqua Lecture Series and doubled as the Bruce MacLaren Distinguished Lecture.

Hands-on STEM activities for high school students were held daily September 12-16. High schools that participated included Madison Central, Model Laboratory, Madison Southern, and Pineville County.

A dinner and networking event in honor of our retired STEM faculty was held on Friday evening, September 16. EKU's president, Dr. David McFaddin, commended the retired faculty for their many years of service to EKU. "Those of us working and learning at EKU today owe you a great deal of gratitude for the foundation you laid for us. We are standing on the shoulders of giants for which we are grateful," he said.

The events of the week concluded with Family Nature Day held at Maywoods Environmental & Educational Laboratory, located in Crab Orchard, KY. Maywoods is one of three natural areas managed and maintained by EKU's Division of Natural Areas. This is a free event for the community and provides an opportunity for families to get together in the outdoors and engage in fun and educational activities.

"To host a successful week-long event like this requires the cooperation of many people and I wish to acknowledge the faculty and staff of the College of STEM for their excellent work, as well as our collaborators which included, but not limited to: Conferencing and Events, Communications and Brand Management, Honors Program, the Chautauqua program, Admissions, Development, School of Music, and City of Richmond Parks and Recreation," said Dr. Otieno.

PLACES AND PROGRAMS

EKU Pollinator Gardens

We depend on bees, butterflies, moths, hummingbirds, and other birds to maintain our food supplies through pollination; however, the past 30 years has shown an alarming decrease in our pollinator populations. Exposure to pesticides, loss of habitat, changing climate, and invasive pests are just a few causes of the declining populations.

Bee sitting on Aster.

One way to help boost pollinator populations is to create pollinator gardens. These are areas designed to contain plants, usually native to the area, that attract these beneficial creatures and support the local ecosystem.

Eastern Kentucky University (EKU) Division of Natural Areas began creating pollinator gardens in 2018. The largest of EKU's pollinator gardens is approximately one-half acre in size and can be found at Taylor Fork Ecological Area on the south side of campus. This garden was established through a GroMore grant from KidsGarden. EKU students prepared the site, planted the seeds, and help maintain the garden.

Planter outside Science Building attracts monarch butterflies.

Smaller gardens behind the Science Building and one in a large planter on the south side of the Science Building were funded through a grant from the Novelis Corporation as part of the Science for Sustainable Living Initiative (SSLI).

"The gardens allow for outdoor-based, STEM-education for a diversity of classes, while providing critical habitat for bees, butterflies, and other pollinators. The gardens educate the campus and local community on the importance of pollinators and the ecosystem services they provide," said Dr. Kelly Watson, professor of geosciences and associate director of the Division of Natural Areas. She continued, "they are part of the initiative to certify EKU as an official Bee Campus USA, which is a designation from the Xerces Society. EKU is already a Tree Campus USA member."

Monarch butterfly caterpillar dines on milkweed.

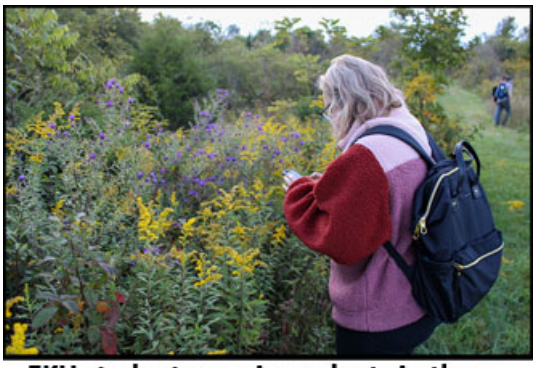
Ms. June Settle, academic administrative coordinator for the Department of Physics, Geosciences, and Astronomy played a large role in creating the pollinator garden in the planter on the south side of the Science Building. This planter was designed to attract monarch butterflies. She commented, "The monarch butterfly, famous for its annual migration to and from Mexico, will only lay eggs on milkweed, the sole host plant of their caterpillars. The monarch population has

declined nearly 90% during the past 20 years, in part, due to the eradication of milkweed. Although small and still in the early stages of development, our planter of common and antelope horn milkweeds has been visited by numerous monarchs. This summer, we successfully raised six caterpillars born on milkweed in the planter. As we introduce additional native flowers to attract monarchs and other pollinators, we hope to see more eggs and caterpillars, apply for Monarch Waystation Certification, and provide a unique learning experience for students and visitors."

Guests who come to campus can tour the gardens, which are a source of campus beautification. The gardens are maintained by students, faculty, and campus volunteers through the Division of Natural Areas. The larger pollinator garden at Taylor Fork is part of an on-going old-field restoration project where the pollinator gardens also provide early successional habitat for migratory songbirds. Management of this larger area requires occasional mowing and the use of prescribed fire.

The gardens are also a source for native wildflower seeds, as part of the Division of Natural Area's seed library, an initiative begun by former EKU student Nicholas Koenig while he served as an Environmental Education Leadership AmeriCorps member. The seed library provides free, native seeds to the community, along with informational materials on how to grow these plants and educational resources on helping pollinators. Seeds will also be used to create new campus pollinator gardens in the future.

The gardens have been featured in several campus workshops, including a native bee workshop and several monarch butterfly workshops at Taylor Fork Ecological Area. In September 2022, SSLI led a pollinator workshop and toured the pollinator gardens. SSLI workshops are developed and led by EKU student interns for the campus community. EKU geology major and SSLI intern, Simon Christian, led the pollinator workshop and commented, "You can read about pollinators and learn about them in classes, but to have a tangible place that students can go and see what they are learning about is such an important resource."



EKU student examines plants in the Taylor Fork pollinator garden.

For more information about the pollinator garden project contact naturalareas@eku.edu.

B.S. in Construction Management

According to the Bureau of Labor Statistics, construction management is an exciting, challenging, and rewarding career with rising employment opportunities. In 2021, the median salary was nearly $99,000. From 2020-2030, this field is projected to grow by 11 percent, which is faster than the average for other jobs.

Eastern Kentucky University's (EKU) Bachelor of Science degree in construction management has a national presence as it is accredited by the American Council for Construction Education (ACCE). The program received its initial accreditation in 1993, becoming one of 38 accredited programs in the nation at that time and the first in Kentucky.

"Our construction management program received its fifth consecutive re-accreditation in July 2022. The program is also a member of the Associated Schools of Construction (ASC) which is the professional association of construction educators and industry practitioners," said Dr. Justin Dodd, the construction management program coordinator.

The program, which resides in the Department of Applied Engineering and Technology (AE&T), was first developed in 1976 by Dr. Richard A. Brooker in collaboration with the Bluegrass Chapter of the Association of General Contractors (AGC) of Kentucky, and at that time was called construction technology. The first courses for this program were offered in fall 1977 and each had an enrollment of five students. The next ten years saw exponential growth and additional faculty were added to the program.

This growth in the program has only increased over the years. In spring 2000, the name was changed from construction technology to construction management to more closely align with industry terminology. The construction management program has a balance of technical and management courses to prepare students for managerial roles in the construction industry and integrated laboratory components, where the theory learned in the classroom is reinforced through structured hands-on activities. Related activities such as construction materials, surveying, construction graphics, estimating, and scheduling are key to the program's success.

Another key to the program's success is cooperative education. Students are required to complete three hours of co-op credits with one or more construction related organizations. "These co-op opportunities allow the students to experience the construction industry first-hand and provide a significant advantage with the transition from college to the workforce," said Dr. Tim Ross, associate dean of the College of Science, Technology, Engineering, and Mathematics and former chair of AE&T. During the 2022 summer session, EKU construction management students logged over 18,500 co-op hours (430 hours per student) with wages ranging from $15.00 to $24.00 per hour.

Students are also encouraged to obtain certifications in one or more areas of construction management such as American Concrete Institute (ACI) Level I Inspector, Occupational Safety and Health Administration (OSHA) 10-Hour and 30-Hour Certificates, LEED (Leadership in Energy & Environmental Design) Green Associate accreditation, and the American Institute of Constructors (AIC) Level I Certification.

Two men reviewing construction plans.

Over the past six years, 100 percent of graduates have found employment in the construction industry. Employers in the construction industry want employees who are skilled technical problem solvers and effective communicators, have hands-on experience through co-operative education experiences, and have nationally recognized certifications in these areas. Our program provides students with these skills. EKU has a long history of providing quality students who have become leaders in the regional construction management workforce. Over the past 12 years, 30% of AGC Kentucky presidents have graduated from the program.

Richard Vincent, executive vice-president of the Associated General Contractors (AGC) of Kentucky, had the following to say, "The EKU construction management program has a legacy of success in preparing students to become construction professionals. This spans generations and cannot be overstated. Kentucky's top commercial construction firms rely upon graduates of the program to, quite literally, build Kentucky. The overwhelming surge in the need for EKU construction management graduates will continue to increase. Record levels of state, federal and private investment translate into opportunity for the men and women choosing to pursue a career in construction."

The program also relies on the Construction Management Industrial Advisory Board of construction industry professionals as they provide valuable input regarding the changing needs of the industry. Their recommendations on matters related to curriculum development, identification of appropriate certifications, emerging technologies, cooperative education, and advance course offerings are provided through annual meetings. Throughout the school year, our industry partners regularly present to and participate in classes to reinforce the relevance of the current curriculum to the development of necessary job skills requested by employers.

Dr. Justin Dodd said, "A successful construction management program expertly aligns student outcomes with industry needs. This ensures that we are not only teaching students about the necessary mix of theory and application that they will need to be successful at their jobs, but that the fundamental skills they develop will translate into marketable skills that will ensure a successful career. The construction management program here at EKU was developed with the end goal in mind. We are here to produce construction professionals. The fact that we have a 100% placement rate for our students is the very definition of success."

For more information on the EKU construction management program, contact Dr. Justin Dodd (Justin.Dodd@eku.edu), program coordinator or Dr. Dennis Field (Dennis.Field@eku.edu), Interim Chair, Department of Applied Engineering and Technology.

FACULTY/STAFF AND STUDENT SPOTLIGHTS

Ms. Tammy McIntosh: Department of Chemistry

Ms. Tammy McIntosh

Ms. Tammy McIntosh was born in Middletown, Ohio, but grew up primarily in Madison County Kentucky. She graduated from Madison Central High School in Richmond, Kentucky and attended classes at Eastern Kentucky University (EKU) as well as through the EKU Workforce Development program. She is currently working toward 29 years of service to EKU.

Ms. McIntosh began her career at EKU in 1994. “I was looking for a new career path and was inspired by an EKU alumna who had worked her way from an entry level position at EKU to a high administrative role. Her encouragement steered the path for a long-lasting career with EKU,” she commented.

During her first position at EKU, she worked her way up to production management supervisor in food service. Her next position led to textbook manager in the University Bookstore. She then moved to the Department of Chemistry where she has served as an administrative assistant since 2001.

“Tammy has been a dedicated member of the Department of Chemistry for 21 years. She has seen the department grow and move from the Moore Building to the new Science Building, as well as worked with five departmental chairs throughout her time in the Department of Chemistry. I will always be grateful for her help as I transitioned to the role of chair several years ago. Tammy is always willing to lend a helping hand to our students, faculty, and staff. Her smile and encouraging words are priceless. She makes our department a welcoming environment and a “home away from home” for our students. I cannot say enough good things about her,” remarked Dr. Tanea Reed, chair of the Department of Chemistry.

Ms. McIntosh looks forward each morning to the positive atmosphere her job provides. “I have been so fortunate to work with and learn from the many wonderful faculty, staff, and students throughout my years at EKU,” she said.

Associate professor of chemistry and director of the STEM Center for Excellence, Dr. Judy Jenkins said, “Though many may not be aware of Tammy’s efforts, her work impacts each of us daily. She has enabled the successes of countless students, staff, and faculty. She is patient, compassionate, and an invaluable calming presence on our team."

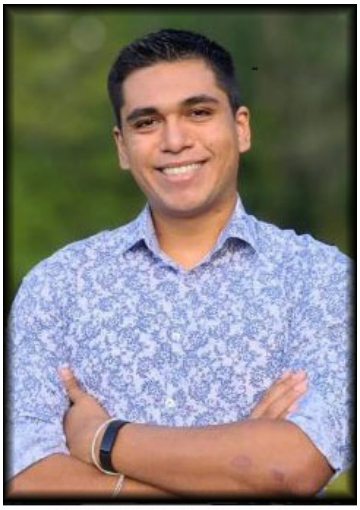
There have been many changes at EKU since Ms. McIntosh’s first day on campus. “Changes in the technology used to conduct daily business seems to be the most significant,” she commented. She continues, “the infrastructure has also changed tremendously! When I started working for the Department of Chemistry it was housed in the Moore Science building. We moved into the new Science Building in 2011. Watching the building come to fruition and

witnessing the hard work and dedication required from so many areas is a memorable and exciting part of my career at the university."

Outside of EKU, Ms. McIntosh enjoys reading, landscaping, and gardening. She also enjoys cooking and home canning, skills she learned from her mother. "I have a strong commitment to my faith and family as that is where I have found my greatest joy," she said.

Ms. McIntosh is married, has two children, and four grandchildren. "I acknowledge the opportunities that EKU has provided for our family. My daughter has earned multiple EKU degrees and is currently pursuing her career here at EKU. Also, my grandson is on target to earn his degree this December. We are thankful and proud to be a part of the EKU community," she said.

Mr. Axel Quintanar-Pena: Department of Physics, Geosciences, and Astronomy


Mr. Axel Quintanar-Pena

Mr. Axel Quintanar-Pena is a Mexican American citizen and was born and raised in Virginia for most of his life. He lived in Mexico for three years but came back to the United States of America (USA) to attend high school, a small private high school in the town of Warrenton, Virginia where his mother currently teaches, and his brother attends.

Mr. Quintanar-Pena attended Berea College in Berea, Kentucky, for five semesters, but realized the broad, liberal arts education at Berea wasn't exactly what he was looking for. He decided to take a semester off because of COVID-19 during which time he pursued a wide variety of hobbies to keep himself busy and held down a job as a waiter at a Mexican restaurant.

He made the decision to transfer to EKU in the fall of 2021 because he felt the physics department at EKU offered greater opportunities than the one at Berea College. "Even though the education I received at Berea was very high quality, I felt that the opportunities for research, as well as more in-depth classes in my major, were more abundant at EKU. I have been able to develop my professional skills and have had multiple internships that have helped me develop professional connections," he said.

Mr. Quintanar-Pena's close proximity to Berea has allowed him to maintain connections he made while attending Berea, but he has also made new connections at EKU. "I have developed much better relationships with new professors and made new friends at EKU which has significantly improved my college experience," he commented.

He is active in departmental clubs and activities. He was inducted in both Sigma Pi Sigma, an honorary society for outstanding scholarship in physics and Tau Sigma, an honorary society that recognizes and promotes the academic excellence and involvement of transfer students. He is also a member of the EKU Chapter of the Society of Physics Students (SPS). "SPS is trying to

create a welcoming atmosphere to new students interested in physics. We are currently trying to make a weekly movie night where students of all majors can come and hangout," he said.

He is employed as a laboratory assistant for physics courses through the student work study program and was accepted into two Research Experience for Undergraduates (REU) programs. He comments, "I have learned the direct and indirect skills through my laboratory assistant position that led me to receive the two REU positions."

"Being a physics major is not an easy thing to pursue, but the amount of patience, knowledge, and experience that I have learned have made me very prepared to tackle any sort of situation or problem with confidence. I think that the problem-solving skills that I have developed here have been the most important thing I learned since those skills are necessary in all fields, especially science," said Mr. Quintanar-Pena.

Dr. Jason Fry, assistant professor in the Department of Physics, Geosciences, and Astronomy said, "Axel has worked in the nuclear and particle physics detector lab (NPPDL) since summer of 2021. He's been able to research, study, and construct scintillation detectors for gamma spectroscopy, data acquisition systems for these detectors, and carried out some data analysis. He has been great to work with and has grown a lot as a young enthusiastic scientist in his time at EKU."

Outside of the classroom, Mr. Quintanar-Pena loves to work-out and cook to relieve stress. He is also an amateur astro photographer whenever he goes back home. He owns multiple telescopes and loves to watch the night sky. During his semester off, he discovered that he is a pretty good spray painter and turned his living room into a home theater to make movies during lockdown much more enjoyable.

"I am currently applying to graduate schools. I am interested in multiple fields, so I am casting a very wide net focusing on physics graduate programs. I am also open to other programs in data science or engineering. I am applying for an internship that, if accepted, will provide me the opportunity to work in a national laboratory alongside major scientists on the cutting edge of scientific knowledge," he said.

He would eventually like to obtain a job in an industry where his skills and talents are being fully appreciated. "I may not know what job exactly I am looking for, but I certainly want it to be exciting," he said.

ALUMNI AND FRIENDS

Dr. Stacey E. Tarvin

Dr. Stacey E. Tarvin

"Realize that a career in medicine is a marathon and not a sprint. Focus on your passions outside medicine as those unique talents will bring success in your chosen field."- Dr. Stacey Tarvin

Dr. Stacey Tarvin was born in Oxford, Ohio, and grew up in southeast Indiana. She chose to attend Eastern Kentucky University (EKU) "because ultimately EKU was a fantastic fit for me personally and the atmosphere just felt right," she said. She was drawn to EKU for the 'top-notch' Honors Program. She notes that the EKU Honors Program is a, "built-in community of intellectuals who foster well-rounded thinkers." My family and I were impressed by the leadership in biological sciences and felt the department was a place where I would succeed." As an honors scholar, she was awarded an academic scholarship from EKU.

She received her Bachelor of Science degree in biological sciences with a pre-medical concentration and a women's studies minor from EKU in 2001. She then attended Indiana University School of Medicine (IUSM) where she received her Doctor of Medicine degree in 2005 and stayed on for her internship and residency training in pediatrics from 2005-2008. She remained at IUSM and Riley Hospital for Children, in Indianapolis, Indiana, for a fellowship in pediatric rheumatology and completed a master's degree in clinical research from Indiana University in 2012.

Dr. Tarvin is currently an assistant professor of clinical pediatrics in the Division of Pediatric Rheumatology at IUSM and Riley Hospital for Children. In her role of assistant professor, she teaches in the medical school and residency programs. She is the Fellowship Director for Pediatric Rheumatology and has leadership roles in the American Academy of Pediatrics, American College of Rheumatology, and Childhood Arthritis Rheumatology Research Alliance.

She is an avid clinical researcher, a fact for which she credits her undergraduate research experience at EKU. "I was fortunate to have a plethora of research experience during my time at EKU. Drs. Barbara Ramey and Suzanne Byrd were my primary science mentors, and each provided opportunities and experiences that shaped my professional growth to this day. Dr. Ramey taught me lab management skills and exploration of the scientific method through projects in her lab. Dr. Byrd encouraged my intellectual curiosity and mentored me to present my research at the Women in the Sciences conference in Oak Ridge, Tennessee, as well as mentoring me for my honors thesis," she explained.

Dr. Tarvin also credits EKU's Honors program. "Through the Honors program, I participated in panel discussions that honed my public speaking skills and comfort at presenting my work. This early research exposure was formative in my career now. I truly realize how lucky I am to have

had faculty who took such a personal interest in my success," she said. Her current research interests focus on therapeutics, health related quality of life, and implementation science.

One of her fondest memories of EKU is sitting in the Ravine on a sunny day studying and enjoying the sights and sounds of campus. She also enjoyed laughing and talking with friends in the Moore Building, visiting with Dr. Byrd during advising appointments, Honors Program pizza suppers, and winter break conference trips with her Honors Program family.

Her advice to current students pursuing a career in medicine is, "Realize that a career in medicine is a marathon and not a sprint. Focus on your passions outside medicine as those unique talents will bring success in your chosen field," she said. She also advises students to work smart and learn to be a teachable team player, and to carve out time for themselves and make it non-negotiable. She drives this point home by quoting Lucille Ball, "Put on your oxygen mask first before you can help others."

Dr. Tarvin remains engaged with EKU. "My family has a scholarship that supports Honors Program students in the sciences and as the family representative, I've remained engaged with the development team and honorees. More importantly, because of the strong mentorship and friendships I made, I've stayed in touch with faculty in biological sciences and the Honors Program. They continue to be supportive mentors and friends to this day," she said.

Dr. Tarvin is married with three children, three cats, and one 'occasionally well-behaved dog'. In her spare time, she enjoys cooking, travel, and anything Disney.

Mrs. Andrea Bailey

Mrs. Ann Bailey

"*My greatest pleasure was in getting to know my students and helping them understand mathematics while overcoming their hesitancy about the subject matter. It was so much fun to see the light come on*!" Mrs. Andrea (Ann) Bailey

Mrs. Andrea (Ann) Bailey is from Bellevue, KY, a small town on the Ohio River, just across from downtown Cincinnati. Her father was a structural engineer and her mother a registered nurse.

She graduated from Bellevue High School in 1970 and then enrolled at Georgetown College in Georgetown, KY. Pursuing a mathematics major had not crossed her mind, as she explains, "I arrived at Georgetown with every intention of majoring in English and becoming a teacher, but the admissions director noticed my entrance scores and suggested that I consider majoring in mathematics. I took a calculus class my first semester and never considered anything else."

After two years of college, Mrs. Bailey decided she did not want to teach and transferred to Eastern Kentucky University (EKU) to pursue a four-year degree in mathematics. Upon obtaining her B.S. degree in mathematics, with a minor in data processing in 1974, she married Mr. Larry Bailey, who is also an EKU alumnus (B.A., history and social studies, 1971; M.A., education, 1979).

Mrs. Bailey was first hired at EKU as a research assistant in the Division of Data Processing while she pursued her M.S. degree in mathematics, which she obtained in 1976. She elaborated on her responsibilities, "In our area, we aided graduate students who were preparing data for thesis work, and I discovered that I thoroughly enjoyed getting to know students and helping them succeed. I continued to work as a software consultant in that area as it evolved into the Division of Academic Computing under the direction of Carol Teague, who modeled professionalism and integrity in all she did." While she enjoyed her work at EKU, she decided to devote most of her time to parenting when their daughter was born.

A career in teaching, which Mrs. Bailey had wanted to avoid, began in 1988 when Dr. Amy King, who had been a guiding force as one of her EKU mathematics professors, asked her to teach a few classes in the Department of Mathematics, Statistics, and Computer Science on a part-time basis. "I agreed and taught the Math for Elementary Teachers course sequence and found I loved explaining math to students who were sometimes afraid of the coursework. My greatest pleasure was in getting to know my students and helping them understand mathematics while overcoming their hesitancy about the subject matter. It was so much fun to see the light come on!" Mrs. Bailey explained.

Eventually, Mrs. Bailey transitioned to full-time teaching, first as a visiting instructor and then lecturer and finally senior lecturer. She taught a variety of courses, and the rewards remained the same. "I found there were so many students who carried a phobia about math because of some past incident, but who learned that if they gave a math course a chance and applied themselves, they could succeed. To this day, my greatest satisfaction is to run into a former student who is doing well in his/her chosen field after starting out trying to avoid a mathematics class."

Asked to comment on significant changes she saw during her time at EKU, Mrs. Bailey responded, "When I began at EKU, I was in a world of punched computer cards and noisy card readers. By the time I retired from my position in 2015, students were using laptops, tablets, and cell phones, but the fundamentals of connecting with students and helping them understand mathematics remained the same."

In addition to herself and her husband being proud of their alma mater, Mrs. Bailey's younger sister, Beth Routledge West, is also a proud EKU alumna, with a B.S.N. degree in nursing (1983).

Volunteer activities with civic organizations in the Richmond community and with Baptist Health Richmond tend to keep Mrs. Bailey very busy in retirement. She also spends time volunteering with after-school tutoring at church and singing in the church choir. The freedom

to travel is also a wonderful perk of retirement, and she and her husband take advantage of that whenever possible. Living in Richmond allows them to stay connected to friends they have made at EKU over the years, and they enjoy athletic events, concerts, and performances on the EKU campus.

"I am proud to have been associated with the long-standing EKU tradition of providing caring, personal contact with students, and it is my sincere hope that EKU will continue that tradition into the future," Mrs. Bailey concluded.

EVENTS

THANKSGIVING BREAK

University Closed

FINALS

COMMENCEMENT

9:00 AM
Alumni Coliseum