

It is with great pride that I present the 2025 Annual Report for the College of Science, Technology, Engineering, and Mathematics (STEM) at Austin Peay State University. This report celebrates our collective achievements, spotlights the exceptional work of our faculty and students, and reaffirms our unwavering commitment to excellence in STEM education and research.

Throughout 2024-25, our college has achieved remarkable progress in advancing our mission to provide transformative, innovative, and engaging educational experiences. We have expanded our investment in pioneering research initiatives and strengthened our strategic partnerships with industry leaders, ensuring our graduates are exceptionally prepared for the evolving challenges and emerging opportunities of an increasingly technological world.

Within these pages, you will discover compelling narratives of groundbreaking research, unprecedented student achievements, and impactful community engagement that embody the spirit of innovation and collaboration defining our college. From our internationally recognized faculty to our accomplished student body, the Austin Peay College of STEM continues to flourish as a dynamic community of scholars, researchers, and leaders making meaningful contributions to society's most pressing challenges.

Looking ahead to 2026 and beyond, we remain steadfast in our vision to establish Austin Peay as a recognized national leader in STEM education and research. I extend my sincere gratitude for your continued support of the Austin Peay College of STEM. As we celebrate our accomplishments in 2025, we recognize that our shared commitment to excellence is building a more promising future for our students, strengthening our community, and contributing to positive change across our interconnected world.

Regards,

Dr. Karen Meisch

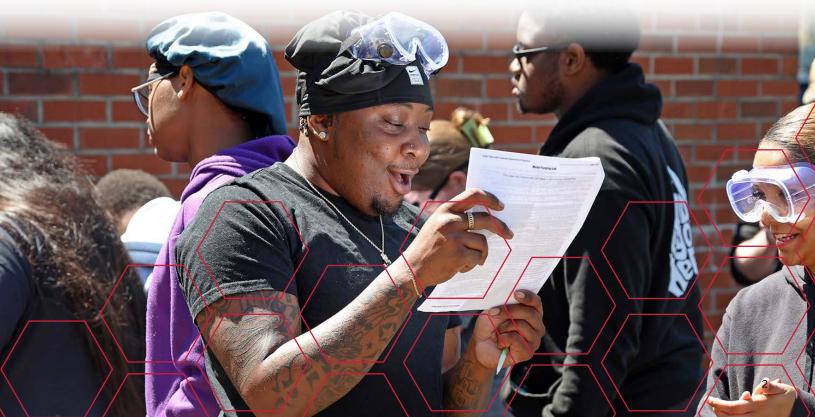
Dean of the College of STEM

# MISSION

The College of STEM provides educational opportunities for students in the areas of agriculture, astronomy, biology, chemistry, computer science, information technology, earth and environmental sciences, mathematics, statistics, medical laboratory science, radiologic sciences, physics, engineering physics, aviation and engineering technology. Our outstanding, discipline-based programs are student-centered and designed to prepare students for responsible positions at all levels of research, industry, education, medicine, and government. We emphasize degree programs relevant to regional economic and market trends, designed to enable graduates to compete in the global economy and foster lifelong learning skills.

Our mission is to promote scientific literacy while emphasizing the process, content, and interdisciplinary nature of science. Additionally, our mission is to develop critical thinking skills, to enhance verbal and written communication abilities, encourage reasoned debate on scientific issues, and promote civic responsibility.

Our goal is to provide professional training at the undergraduate and graduate levels, while serving as a foundation for careers in science, technology, engineering and mathematics, as well as to provide training for allied health professionals and pre-professional training for careers in medicine, dentistry, pharmacy, veterinary science and much more. In addition, we encourage collaborative research with faculty, internships, and other learning experiences that facilitate transition to work or graduate education.



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#### ALUMNI

We want to hear from you! Scan this code to update your contact information so we can reach out to connect you with events in your area or an invite to campus!

#### GIVE TO THE COLLEGE -

If you're looking for a way to give back, consider a donation to the CoSTEM Fund of Excellence! These funds support college-designated initiatives and priorities, enhancing access and resources for students, faculty and staff.







## Spencer Summers in South Africa



Last summer, pre-vet student Jordan Spencer took part in a life-changing journey to South Africa, working at Cango Wildlife Ranch, renowned for its cheetah breeding facility, and the Selati Game Preserve near Kruger National Park.

t's not the most glamorous work in the world when you're raking a tiger's habitat in South Africa, but also, you're raking a tiger's habitat in South Africa - nobody else gets to say that," Spencer said. "I kept telling the other people in the program with me, 'None of your classmates get to experience this.

These hands-on experiences enriched Spencer's education and solidified her career aspirations in wildlife conservation.

"For someone like me, this was so valuable because I don't want to work in a small animal practice," she said. "I want to work in wildlife rehabilitation and in zoos and in breeding programs to help bring some of these species back from the brink of extinction."

## APSU Grad Amaya Caudel Heads to Los Alamos

Recent physics graduate Amaya Caudel was selected for a prestigious summer internship at Los Alamos National Laboratory in New Mexico, marking another milestone in her impressive research career.

Caudel, who completed three Research Experiences for Undergraduates (REU) programs during her time as an undergraduate, worked on computational materials research focusing on titanium aluminum. Her project leveraged the speed of machine learning algorithms by training them off of highly accurate Density Functional Theory (DFT) outputs. Taking just a few data points for the phase of this material using the time-costly DFT method, the machine learning algorithm was able to construct an entire phase diagram, making up to tens of thousands of points in a fraction of the time.

## Innovation Experience Highlights

In April, the college hosted The Innovation Experience, our annual event designed to showcase the brilliant minds of our College of STEM students! Our students impressed visitors with cutting-edge projects in engineering, robotics, computer science, information systems, data analytics, technology, logistics, and additive manufacturing.

Meleah Lanier and Jair Martinez won the overall competition with their wheeled litter project. The trio of Michael Graff, Yuriy Holovchak and Joshua Rye finished second with their inlet flow wind-tunnel project for Trane, and Samantha Cook, Lucas Gamboa and Bricen Hicks placed third with the Requiem Registry.

The winning project, entitled the Wheeled Medical Litter Project, was a collaborative effort between Austin Peay and EagleWerx Applied Tactical Innovation Center at Fort Campbell to develop a lightweight, rapidly deployable casualty evacuation system. This project addresses these limitations by integrating a telescopic frame, detachable non-pneumatic tires (NPTs), and an ergonomic hands-free harness system, enabling greater mobility and reducing physical strain during Tactical Evacuation (TACEVAC) operations.

The college also recognized Metalsa with its Business Collaborator Award. Metalsa's partnership has created transformative opportunities for our students across multiple disciplines. Through comprehensive internship programs, students gain invaluable hands-on experience in advanced manufacturing environments. The company's dedicated mentors work closely with interns, helping them bridge the crucial gap between classroom theory and industrial application.







# Aviation Science Serves in Carolina Clean-Up

When the call went out for aid in the aftermath of Hurricane Helene in Fall 2024, four members of the Austin Peay aviation science family leapt into action.

Senior Ray Johnson, who completed his commercial training with Nashville-based AeroLuxe Aviation, joined the company as it flew relief flights into North Carolina, working around the clock for days to aid those affected by the devastation.

As Ray looked to return to Clarksville, Sean Jones was trying to find his way to North Carolina. Jones, a 2022 program graduate and instructor with a background in special operations, joined ops pros engaged in relief efforts, delivering supplies and urgent assistance in remote areas. Two other aviation science alumni, Sean-Michael Horn and Anthony Vasquez, also helped move supplies in the region as Asheville and surrounding areas began to slowly rebuild.

## CoSTEM Hosts Inaugural Hooding Ceremony-

The college hosted its first-ever hooding ceremony for its Spring 2025 master's students, celebrating the achievements of 39 graduates in biology, computer science and information technology, and mathematics in an event at Mabry Music Hall in the Music/Mass Communications Building.

This celebration noted the accomplishments of these graduates and allowed them to celebrate with the faculty members who have been with them throughout their academic journey at Austin Peay.



#### Christine Jator Snares Harvill and Drane Awards

In a rare achievement, senior mathematics major Christine Jator earned both of Austin Peay State University's highest student recognitions.

Jator was presented with the William McClure Drane Award and the Halbert Harvill Civitan Citizenship Award at this year's Student Life and Leadership Awards Ceremony, capping off a remarkable academic career at Austin Peay. She is the first student in at least 30 years to take both honors in the same year.

Jator, who previously participated in the University of Chicago's Summer Undergraduate Mathematics and Statistics Accelerator (SUMSA) program and a National Science Foundation undergraduate research opportunity in Texas, has been devoutly dedicated to her studies at Austin Peay. Her commitment to academic excellence took her to Southern Methodist University this fall in pursuit of her Ph.D. in statistics.

## CoSTEM Students Shine at Research Symposium

Students from the college were the standout presenters at the Office of Student Research and Innovation (OSRI) in April, sweeping the oral presentation awards and winning two of three poster awards at the graduate level. This event showcases the innovative work Austin Peay students do in conjunction with professors, proving once again the impact CoSTEM students are having on the future of science.









#### Woltmann Named Director of CEFB

After serving as the interim director since 2022, Dr. Stefan Woltmann was named the director of the Center of Excellence for Field Biology (CEFB), effective Aug. 1, 2024.

Woltmann began as a principal investigator with the CEFB in 2014, conducting field-based research and developing externally funded field- and lab-based ornithology research programs while training graduate and undergraduate students in field biology techniques and best practices.

As director, Woltmann looks to expand the center's capacity to support student research, and to secure funding for larger collaborative research projects, among other initiatives.

# Smith, Bullock, and Donev Receive APSU Faculty Awards

Dr. Eugene Donev, Dr. Audrey Bullock and Dr. J. Allyn Smith were the college's recipients of prestigious university honors at the August 2024 faculty awards ceremony.

Doney, who received the Socrates Award, has revitalized how students engage with physics courses at Austin Peay with an emphasis on experiential and project-based learning. He is also an active scholar with publications related to physics pedagogy.

Bullock received the Tenured Faculty Award for Excellence in Teaching. Her colleagues look to her for curricular development and improvement in Austin Peay's mathematics education program, including instrumental roles in both the Math Trail and in the creation of STEM activities at The City Forum. Her expertise impacts students in the College of STEM and the College of Education, where she mentors and advises future math educators and aspiring school administrators.

Smith was awarded the Chamber of Commerce Distinguished Faculty Award for Community Service. Connecting academia and the Clarksville community, Smith and his colleagues have provided opportunities for the community to use the telescopes and observatory at the Coleman Tractor APSU Farm Powered by Kubota, educated the community on how to safely view the recent solar eclipse and planted the seed for what would eventually become Science on Tap, the monthly speaker series at Strawberry Alley Ale Works that has impacted thousands of community members since its inception in 2020.

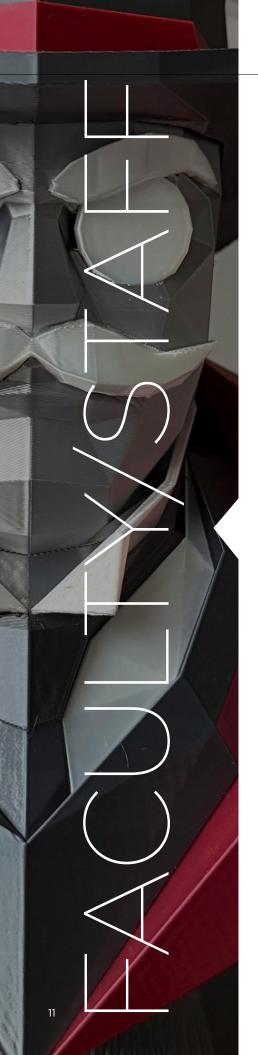
### Sea Lion Research in the Galapagos Islands

Last summer, Dr. Madeline Giefer of Department of Earth and Environmental Sciences and Dr. Catherine Haase from the Department of Biology traversed the shores of the Galapagos Islands to learn more about animal behavior and the human-wildlife conflict between people and sea lions, in a place with just 35,000 residents but more than 250,000 tourists each year.

The duo shared how their research works to understand and protect these remarkable animals as they navigate the challenges of sharing their habitat with a growing human population. As tourism in the Galapagos grows, this research could prove crucial in managing the delicate balance between human activity and wildlife conservation. Understanding how sea lions adapt to climate and human presence can help developconservation strategies to ensure these unique animals thrive in their equatorial home.

The pair shared this information widely throughout the last academic year, including at a Science on Tap in April. The duo plan to return to the Galapagos in 2026 with more advanced equipment, including drones. They hope to gather more detailed data on sea lions' heat loss management and the impact of human presence on their behavior, while helping locals and other biologists understand the species' unique social structures.





## Prairie Preacher Documentary Wins Regional Emmy ————

The Prairie Preacher, a PBS Appalachia Virginia documentary produced in partnership with the Southeastern Grasslands Institute (SGI) at Austin Peay, recently won an Emmy Award at the 2025 Emmys National Capital Region ceremony.

The 27-minute film features Dr. Dwayne Estes, a botanist who earned his nickname for his passionate advocacy of grassland conservation. Once a child who found solace in nature, Estes now dedicates his life to saving America's most endangered ecosystem — southeastern grasslands. Dr. Estes and the entire SGI team work tirelessly to protect and restore these vital landscapes.

#### Publications -

CoSTEM faculty and students are doing vital research to serve the scientific community, and their work culminated in more than 40 published scholarly articles in various peer-reviewed journals and textbooks during the last academic year. In a show of what makes Austin Peay unique, more than a third of these articles and entries featured a former or current Austin Peay student as an author, highlighting the work these students are doing at the undergraduate and graduate level.

## 

In an effort to create a more unified and cohesive environment within the college, a group of dedicated faculty and staff launched a new lunch-and-learn style series entitled "You Belong in CoSTEM."

At Austin Peay, we believe in recognizing and valuing the unique perspectives of all members in our community. Our "You Belong in CoSTEM" events aim to spotlight different groups and topics to foster a deeper understanding and appreciation for the distinctive contributions they bring to our academic community.

The Next Generation

## Samadidana's Generative Al Class Presents Intriguing Projects

In April, Dr. Saied Samadidana's new class on generative AI showcased its semester-long class projects, which included fascinating research and development in coding and generative imaging. Students conceived and developed their projects by working to understand generative models, considering ethical and societal implications and then applied this knowledge using generative algorithms.

## Thompson Takes Spring Sabbatical to Study Plant Oils

Dr. Amy Thompson, chair of the Department of Biology, was on research sabbatical during the Spring 2025 semester. During this time, she studied how antimicrobial plant oils can facilitate bacterial and fungal growth in certain conditions. This work showed that these oils may not be good options for treatment of certain types of microbial infections.

# GIS Center Partners with Vanderbilt on LIDAR Project Serving Clarksville Community ———

The GIS Center stepped up to provide support for a research project with Vanderbilt University and the Clarksville Street Department to enhance public safety using light detection and ranging (LIDAR) technology to analyze the travel patterns of cars, pedestrians, and cyclists in Clarksville.

The project uses the LIDAR technology to create detailed 3D models through pulsed light, gather data on traffic behaviors and improve safety. Unlike traditional license plate readers or red-light cameras, LIDAR offers a nonintrusive and comprehensive way to study traffic without compromising privacy.





# Health Professions Building Opens for Fall 2025 ———

When Fall 2025 semester begins, the Allied Health Sciences department will move out of Sundquist and into the new Health Professions Building at the corner of Eighth and Marion Streets.

The 114,600-square-foot project broke ground in August 2023 and aims to provide a first-class educational environment for students in Austin Peay's health professions programs. Construction was made possible through support from the Clarksville-Montgomery County Community Health Foundation and the Tennessee General Assembly.

Austin Peay's School of Nursing and the departments of Allied Health Sciences, Health and Human Performance, Psychology, and Social Work are now consolidated within the building, along with an on-site diagnostic laboratory that serves the Austin Peay community and acts as a clinical site for students in the Medical Laboratory Science program.

## Facilities Updates and Improvements

There was more to the onenhancements campus 2024-25 than new buildings renaminas. In Sundauist Science Complex, a long-awaited refurbishment of the greenhouse allowed Zeus. our Titan Arum, to move back home after a lengthy stay at the Nashville Zoo, and will give students an on-campus home for plant research. Athena was able to move back into her on-campus home just before her first bloom cycle began in June!

Next door to the greenhouse, a computer lab has been refurbished into a new small-animal handling facility to support veterinary technology students. Once fully furbished, this facility will function as a training center for students to learn small-animal handling techniques in a controlled, oncampus environment.



# Coleman Tractor and Kubota Partner with APSU in Historic Agreement

In March, Coleman Tractor Company and Kubota Tractor Corporation signed a three-year agreement to provide state-of-the-art equipment and support to the university's agricultural programs. As part of the agreement, the Department of Agriculture's Farm and Environmental Education Center has been renamed the Coleman Tractor APSU Farm Powered by Kubota.

The partnership began with the receipt of all agreed-upon equipment, including multiple Kubota tractors, mowers, hay equipment, and utility vehicles. This equipment will be used for educational purposes and farm operations, including forage production for university livestock. Updated equipment will be provided annually as part of the partnership.

On March 18, Austin Peay hosted an event at the newly named facility to celebrate the partnership. Leadership from the university, Coleman Tractor, and Kubota were on hand to unveil the new name, discuss the partnership's impact on education at APSU and witness equipment demonstrations showcasing new opportunities for students.

#### Advising Updates and Additions —

The student success team for the college grew in 2025, with Ajay Thompson taking the lead! Thompson joined Student Success in 2019 and ascended to director for the College of STEM in 2025. She leads an eight-person team charged with making sure students remain engaged inside and outside the classroom and providing personalized support as they transition to university life, plan their academic paths, and overcome challenges.

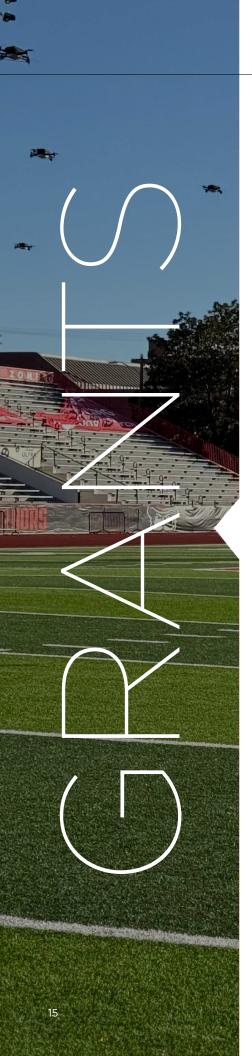
# New Friends at the Coleman Tractor APSU Farm Powered by Kubota

It's always a good day to welcome new friends to the farm. Last summer, we added a herd of Kiko goats to the pasture. This year, two new Boer goats named, we kid you not, Sparky Whistlepig and the G.O.A.T. Dolly joined the herd, further enhancing hands-on opportunities for our veterinary technology students.

The Kiko herd, known for their hardiness and parasite resistance, were carefully selected by associate professor of agriculture Dr. Rodney Mills to provide optimal learning experiences for students. Generous benefactors funded the goats through Austin Peay's agriculture department.

Speaking of new friends at the Coleman Tractor APSU Farm Powered by Kubota, the students welcomed Strawberry Shortcake to the farm this spring. The 92-pound calf was born on the farm, and our outstanding vet tech students performed all the necessary ministrations, including weighing her, applying iodine to her navel and ear tagging before unanimously agreeing on her name.





# Dr. Mann Leads Google Grant Program for Incoming Students

Last summer, incoming freshmen students interested in STEM got a crash-course in the college thanks to a Google Grant earned by Dr. Meagan Mann of the chemistry department. "Students to STEM Professionals" was funded by a grant from Google's Data Center Social Impact Team. Mann led participants through a week-long program that immersed them in the college's nine departments and allowed them to explore job prospects, research opportunities and much more.

During the week, activities took students down the APSU Math Trail, on a tour of the lab facilities in the Engineering Technology Building and out to the Coleman Tractor APSU Farm Powered by Kubota. Each student received a \$500 scholarship and a new iPad in addition to their weeklong bootcamp.

## Quartet of Faculty Mini-Grants Awarded

A quartet of CoSTEM projects earned Innovative Teaching Mini-Grants in 2024. These grants support groundbreaking educational initiatives by CoSTEM faculty to enhance student engagement and success in STEM fields. These innovative projects highlight the college's commitment to fostering an engaging, supportive educational environment that meets the diverse needs of its students. The CoSTEM Innovative Teaching Mini-Grants are instrumental in advancing these goals, ensuring that the next generation of STEM professionals is well-equipped for future challenges.

The 2024 grant awardees (project scope in parentheses):

**Dr. Alice Lin** (Revolutionized APSU's Introduction to Game Development course by integrating virtual reality immersive experiences)

**Dr. Anuradha Pathiranage** (Funded essential materials for a new course researching the chemical processes involved in hair dyeing)

**Dr. Mahesh Pallikonda, Dr. Hossain Ahmed and Jody Alberd** (Aimed to improve knowledge retention and engagement among students, particularly military-affiliated and nontraditional learners, by offering flexible, experiential learning opportunities)

**Dr. Saied Samadidana and Dr. Anuradha Pathiranage** (Developed an Alpowered chemistry quiz app in response to evolving student needs for innovative and accessible technology, offering personalized, adaptive learning experiences to reinforce understanding of complex chemistry concepts)

#### GIS, Math Receive IGSA for Fort Campbell Work

The GIS Center and the Department of Mathematics and Statistics have signed a historic 10-year Intergovernmental Support Agreement (IGSA) with Fort Campbell to conduct comprehensive economic impact studies of the military installation's influence on the region, marking the first-ever IGSA partnership for the mathematics department.

The project's scope includes analyzing local employment numbers, tax revenue, construction contracts, and the economic impact of military retirees choosing to settle in the region. The team will create a comprehensive database combining geographic information systems with statistical analysis.

# Carnegie Foundation Names APSU Master's: Larger, Research Institution

Austin Peay was recognized as a Master's: Larger, Research institution by the Carnegie Foundation for the Advancement of Teaching and the American Council on Education (ACE), marking a significant advancement in the university's research profile and opportunities for its students.

This designation opens the door for APSU to pursue expanded research opportunities, increased external funding, and stronger partnerships with industry and government agencies.

#### SOSI grants

A pair of organizations earned a CoSTEM Student Organization Support Initiative (SOSI) grant, designed to provide CoSTEM students with funds to support their organizations' efforts!

**Wildlife Society and Tri-Beta** plans to bring the Nashville Zoo to Austin Peay, offering students an opportunity to observe wildlife up close and engage in a career-oriented panel discussion.

**GeoClub** hosted an open house, allowing students to paint with club members and other earth and environmental science majors.

hank you to all our College of STEM donors and supporters for your generosity in 2025. Your support enables us to provide exceptional resources, fund pioneering research, and create transformative opportunities for our students and faculty. We are deeply grateful for your commitment to our college and your investment in the future of STEM education and innovation as we move forward into 2026.







## Science on Tap

Science on Tap continued to feature innovative speakers last year, including two unique experiences. In December, Emmy Award-winning meteorologist Henry Rothenberg from News Channel 5 in Nashville became the first person from outside Austin Peay to present a Science on Tap topic when he lectured on the December 2023 tornado that struck Clarksville. In February, chemistry chair Dr. Lisa Sullivan was joined by Dr. Jonniann Butterfield from sociology to present "What's Love Got To Do With It?" in a collaboration between STEM and the College of Behavioral and Health Sciences.

#### Revival of CoSTEM Lecture Series

The college revived its lecture series in Spring 2025 and welcomed Dr. Dawnie Wolfe Steadman, director of the Forensic Anthropology Center and professor of anthropology at the University of Tennessee at Knoxville, as the first speaker.

Steadman is part of a team of women researchers who oversee one of the world's most unique research facilities, the Anthropology Research Facility, or "Body Farm." Its scientists study human decomposition to help solve crimes and advance forensic science. Dr. Steadman shared her expertise and engaged with our community during both the lecture and rooftop Q&A session at Shelby's Trio on May 1.

We're looking forward to continuing the Lecture Series in October 2025 with Dr. Temple Grandin, a world-renowned author, scientist and activist.

#### APSU Hosts VEX Robotics Competition

In March, Austin Peay and the College hosted the Tennessee State VEX Robotics Competition in the Dunn Center. This celebration brought together the top VEX V5 Robotics teams from all corners of Tennessee together to celebrate their achievements and crown state champions. This was the first time this state competition was hosted on a college campus, an honor for Austin Peay and the College to participate as the initial host site. The winners qualified for the National Vex Robotics Competition in Dallas.

## CoSTEM Sponsors Basketball Night

Students, faculty and staff put on a show at February's CoSTEM-sponsored Austin Peay basketball game. As it turns out, liquid nitrogen ice cream, beanies and 3D printing are a perfect complement to a 90-67 Austin Peay win!

#### "Peayple in the Community" a Smash Hit

In August, Austin Peay kicked off the semester with Peayple in the Community, a day of service for students, faculty and staff to give back and make a tangible impact in Clarksville. From helping the Southeastern Grasslands Institute with a seed-gathering event to spending time with former service members at the Tennessee Veterans Home, we're proud of how engaged the College of STEM was in the first-of-its-kind event.

# EagleWerx Partnership Provides Experiential Learning for CoSTEM Students

When opportunities for real-world experience intersect with cutting-edge military innovation, unique learning experiences emerge.

This is precisely what CoSTEM students are discovering through their collaboration with Fort Campbell's EagleWerx Applied Tactical Innovation Center, a hub for solving military challenges with practical and innovative solutions.

The Civil-Military Innovation Institute (CMI2) interns at Eaglewerx are tasked with developing solutions that not only meet current military needs but also anticipate future challenges. This proactive approach is central to the internship experience, ensuring that the work students do has lasting value.

#### CoSTEM Sponors New Year's Eve Drone Show -

The college collaborated with Austin Peay's Department of Art + Design and UAV Pro, Inc. to produce two drone shows at The New Year's Eve Celebration, hosted by Montgomery County Parks and Rec at the Downtown Commons. In addition to two sensational shows, UAV Pro hosted a free drone workshop on campus to guide others interested in creating their own shows.

# Aviation Science Partners with County for Easter Egg Drop

The Aviation Science program participated in the Montgomery County Parks and Recreation's 2025 Easter Egg Hunt, dropping 2,000 eggs from a low-flying Robinson R44 and landing a Guimbal to allow local families to take a closer look at our helicopters.







# BYHEN

18

Austin Peay students who have studied in Europe thanks to the IRES grant from the NSF

Peer-reviewed publications published by APSU faculty and students in academic year 2024-25

440

Acres owned and overseen by Austin Peay at the Coleman Tractor APSU Farm Powered by Kubota

5

Research and Scholarly Support Grants awarded for CoSTEM projects in 2024-25

13,027

Distinct engagements from LinkedIn posts on social media in 2024-25

# IUMBERS RS

21.7

Percent increase in overall social media impressions from the 2023-24 academic year to 2024-25

150

Acres of grassland being restored by the Southeastern Grasslands Institute at Google's Clarksville campus

801,539

Amount contributed by donors to the College of STEM Fund of Excellence and CoSTEM Scholarship Fund in 2024-25

# 387.39

Million total unique visitors to 94 College of STEM articles on APSU.edu in 2024-25

1,929

Students enrolled in the College of STEM in Fall 2024

