COLLEGE OF SCIENCE, TECHNOLOGY, ENGINEERING, MATHEMATICS AND TRANSPORTATION

CSTEM-T PUBLICATION

MESSAGE FROM THE DEAN

Stanley N. Ihekweazu

PROFESSOR AND DEAN

ISSUE ONE, 2026 ANNUAL

The challenge before many STEM Colleges across the United States and across the globe is to constantly push the frontiers of learning and educating the next generation of scientists and engineers who are not only well-versed in current science and engineering innovation, but also to produce scientists and engineers who are able to build bridges between current science and engineering practice and new technologies. With the recent Carnegie designation of the university as an R2 Institution, the College of STEM-T is poised to rise to the challenge while maintaining the core mission of the university.

As new technologies such as Artificial Intelligence, Autonomous Vehicles and so forth challenge the traditional way of doing things, these "disruptive technologies" are poised to become the new norms of learning and business transactions. The world looks up to and expects science and engineering programs to lead the way in navigating these technologies.

Over the last several years, the State of South Carolina has become a manufacturing hub with many manufacturing companies such as Boeing Aircraft, BMW, Volvo Motors, Samsung and Scott Motors who call the State home. This has led to an increase in the demand for both science and engineering graduates. SC State University stands ready to partner with these companies to proffer solutions to mitigate the manpower shortages these companies face by establishing three (3) new undergraduate degree programs in engineering and one (1) graduate degree program online. These programs include:

- Computer Engineering BS
- Electrical Engineering BS
- Mechanical Engineering-BS
- Cybersecurity MS (online)

Furthermore, through the newly established Center for Energy and Environmental Solutions (CEES), the college seeks to expand its research capacity in alternative energy sources such as solar, nuclear, hydrogen and more.

To learn more about CSTEM-T, scan QR code

Dr. Sahoo (PI) and Dr. Kim (Co-PI) with undergraduate researchers of their AI-based smart farming project. From left: Mr. Mark Pelzer (Undergraduate Researcher), Ms. Nadia Omer (Undergraduate Researcher), Dr. Jagruti Sahoo (Associate Professor), Ms. Dajanique Leysath (Undergraduate Researcher), Dr. Young-Gyun Kim (Professor).

DR. JAGRUTI SAHOO–ADVANCING CYBERSECURITY AND AI INNOVATION AT SC STATE

Dr. Jagruti Sahoo, Associate Professor of Computer Science in the Department of Computer Science and Mathematics at South Carolina State University, is shaping the future of technology through her leadership in cybersecurity, artificial intelligence (AI), and smart systems research. She also serves as the academic program coordinator for the Bachelor of Science in Cybersecurity and as the alternate point of contact for SC State's National Center of Academic Excellence in Cyber Defense Education.

Dr. Sahoo has authored 33 peer-reviewed publications and leads multiple projects at the intersection of AI, Internet of Things (IoT), and Connected and Autonomous Vehicles (CAVs). Her research explores innovative ways to enhance system resilience, efficiency, and security in emerging technologies.

One of her flagship initiatives focuses on AI-driven smart farming, where her team is developing an intelligent engine to recommend optimal AI models for agricultural needs. The project integrates multi-UAV (unmanned aerial vehicle) systems that perform farm tasks efficiently while conserving energy and avoiding collisions.

In another major effort, Dr. Sahoo is strengthening CAV cybersecurity by creating a virtualized framework that improves software resilience using code diversification and reinforcement learning techniques. Her work applies deep reinforcement learning (DRL) and Q-learning to optimize software security in both CAV and IoT environments.

A dedicated mentor, Dr. Sahoo has guided more than a dozen undergraduate and graduate students over the past two years. Her mentees have presented and won awards at the BECT Symposium, SC EPSCoR State Conference, and STEM-T Showcase, with research spanning topics such as AutoML in agriculture, IoT security, and machine learning–based crop yield prediction. Several of her graduate students have also earned recognition for research on transportation cybersecurity and software security for CAVs, including a publication at IEEE SoutheastCon 2025.

Beyond campus, Dr. Sahoo actively shares her expertise through invited talks, including a presentation on CAV cybersecurity for the National Center for Transportation Cybersecurity and Resiliency at Clemson University, and a feature on AI in agriculture in a WeHBSeeU TV documentary.

Her work exemplifies SC State's commitment to advancing innovation, empowering students, and driving research that strengthens communities and industries across South Carolina and beyond.

DR. ASHLEY EVANS KNOWELL: ADVANCING HEALTH EQUITY THROUGH INNOVATION, RESEARCH, AND COMMUNITY EMPOWERMENT

Dr. Ashley Evans Knowell is a distinguished, award-winning educator and visionary researcher in South Carolina State University's dynamic College of Science, Technology, Engineering, Mathematics, and Transportation (STEM-T). She currently serves as an esteemed associate professor of biology and bioengineering sciences and proudly co-directs the university's transformative Health Education Research and Training Center (HERT-C). In recognition of her extraordinary contributions to education, leadership, and community health, Dr. Knowell was honored as the 2024 Professor of the Year for SC State's STEM-T College.

Dr. Knowell earned her Bachelor of Science in Biology, with a minor in Chemistry, from South Carolina State University in 2006, and later earned her Ph.D. in Biology with a concentration in Cancer Biology from the highly regarded Clark Atlanta University in 2013. Her passionate research focus centers on health disparities, cancer biology, and innovative, community-based health interventions that empower underserved populations.

Beyond academia, Dr. Knowell is fiercely committed to advancing equitable access to healthcare. She played a pivotal, visionary role in the successful launch of SC State's OnMed CareStation—a groundbreaking telehealth kiosk offering free, convenient healthcare access to faculty, staff, and the wider public. This first-of-its-kind telehealth hub, made possible through the Congressman James E. Clyburn Community Grant Program and a generous $1 million USDA Distance Learning and Telehealth grant, has positioned SC State as a trailblazer in accessible, tech-enabled health service delivery across rural communities.

Dr. Knowell is also tremendously passionate about mentoring and shaping the future of SCSU students. She is deeply devoted to fostering a nurturing, inclusive, and intellectually enriching environment where students feel valued, empowered, and inspired to thrive. In partnership with Dr. Audrey McCrary Quarles of the Department of Health Sciences, Dr. Knowell helped launch SCSU's Community Health Worker (CHW) Training Program—a transformative, HRSA-funded initiative designed to address longstanding health disparities in South Carolina's rural, predominantly African American communities along the I-95 corridor. To date, more than 175 CHWs, including SC State students and those from other SC HBCUs, have been trained through this no-cost, high-impact program. Its profound impact includes diversifying the public health workforce, promoting community integration, and meaningfully reducing health disparities at the grassroots level.

In addition, Dr. Knowell leads an ambitious Infant and Maternal Mortality (IMM) Initiative, funded by the South Carolina Department of Public Health. This powerful program works collaboratively with churches, HBCUs, community organizations, and nonprofits to implement grassroots-level interventions—from community baby showers and interactive educational webinars to emotionally resonant documentary screenings and strategic action planning sessions. With over 30 IMM community mini-grants awarded, the program's vibrant and community-driven mission is to combat infant and maternal mortality, build organizational capacity, and raise urgent awareness about the systemic health challenges affecting mothers and babies across the state.

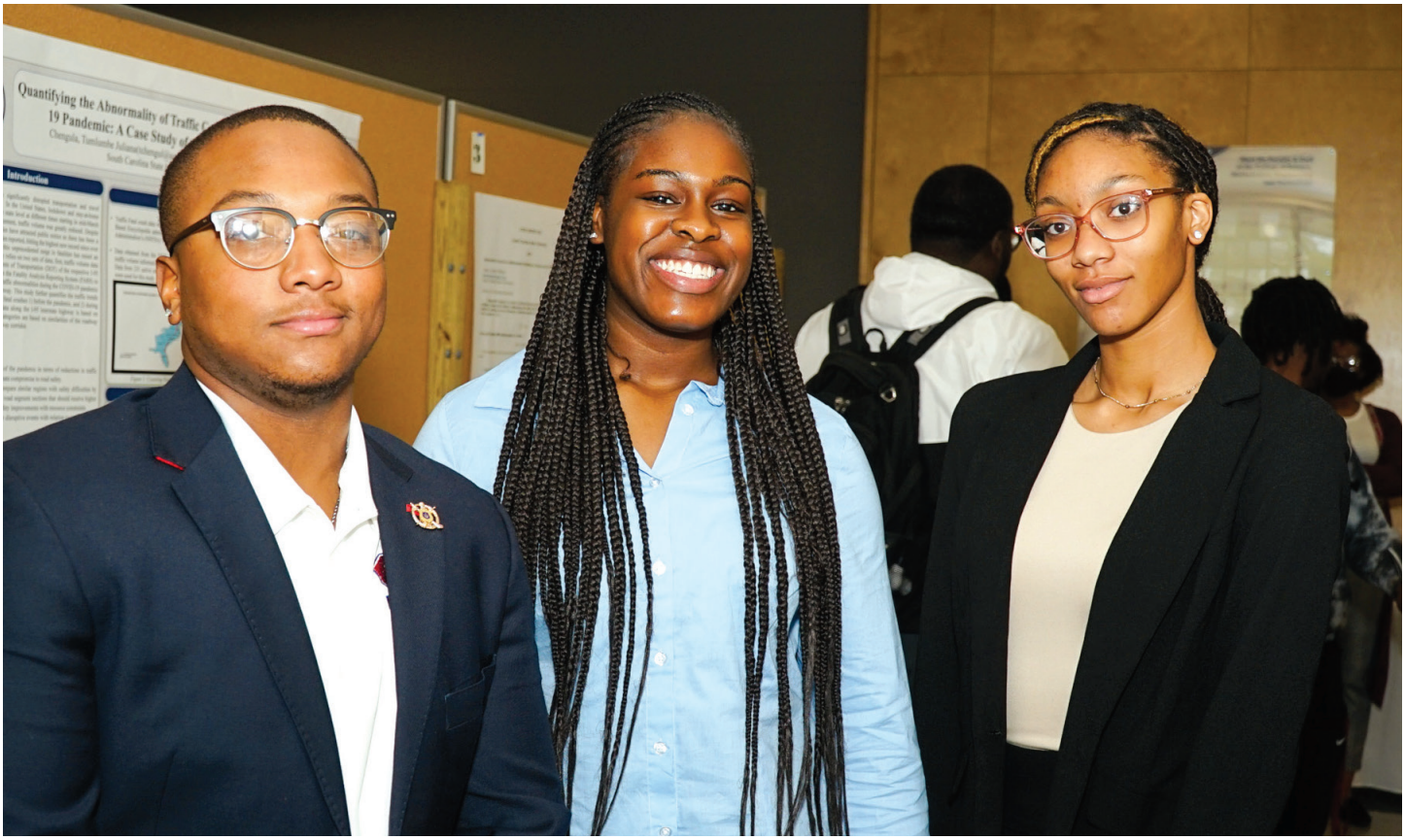
Dr. Knowell is, without a doubt, a transformative force—brilliantly bridging the realms of higher education, community health, and public service. Her trailblazing work elevates student success, expands life-saving healthcare access, and reaffirms SC State's role as a dynamic leader in health-focused innovation and community empowerment.

For more information or to connect with Dr. Knowell, you may reach her at aevans10@scsu.edu.

RESEARCH HIGHLIGHTS: ADVANCING KNOWLEDGE AT SC STATE

South Carolina State University continues to expand its research portfolio across science, engineering, and education — securing over $50 million in grants and partnerships that strengthen innovation, workforce development, and student opportunity.

- Project Title: "Historically Black, Colleges, and Universities Graduate Program (HBCU) MST" funded by U.S. Department of Education, $4.5 mil. 10/01/2023 - 09/30/2029, Judith Mwakalonge (Co-PI)
- Project title: National Center for Transportation Cyber Security and Resiliency (TraCR), funded by US Department of Transportation, $1,000,000, 2022-2028, Judith Mwakalonge (PI),
- Project Title: Off-Road Obstacle Detection Analysis for Autonomy-Enabled Ground Vehicle Navigation, submitted to US Army Ground Vehicle Systems Center, $547,011, 2023-2025, Judith Mwakalonge (PI), Saidi Siuhi (Co-PI), Jae-Dong Hong (Co-PI)
- Project Title: "Minority Science and Engineering Improvement Program (MSIEP)", $465,000, 2015-2017, and extended 2018-2021, DOE, Musa Danjaji (CO-PI)
- Project Title: "Efficiency-Based Fleet Traversing Scheme Design Under the Risk of Disruptions Using Goal Programming Model, submitted to US Army Ground Vehicle Systems Center, $284,120, 2021-2023, Judith Mwakalonge (PI), Jae-Dong Hong (Co-PI)
- Project Title: "Data-driven Models for Vision-based Commercial Motor Vehicle Safety in Work Zone, submitted to Federal Motor Carrier Safety Administration, $1,301,162, 2022-2024, Judith Mwakalonge (PI), Saidi Siuhi (Co-PI)
- Project Title: "AI and ML-based Detection Methods for Learning and Research in Nuclear Engineering", submitted to US Department of Energy, $405,704, 2022-2025, Judith Mwakalonge (PI), Musa Danjaji (Co-PI), Saidi Siuhi (Co-PI), Jai Lee (Co-PI)
- Project Title: "Historically Black, Colleges, and Universities Graduate Program (HBCU) MST" funded by U.S. Department of Education, $3.2 mil. 10/01/2017 - 09/30/2023, Judith Mwakalonge (Co-PI). Musa Danjaji (Co-PI),
- Project Title: "Center for Connected Multimodal Mobility", funded by U.S. Department of Transportation, $780,000, 10/01/2016 - 09/30/2022, Judith Mwakalonge (PI), Saidi Siuhi (Co-PI), Jae-Dong Hong (Co-PI)
- Project Title: "An Investigation of Pedestrian Signals to Reduce Intersection Crashes and Red-Light Violations for Elderly Drivers", US DOT, $40,000, 2015- 2016, Judith Mwakalonge (PI).
- Project Title: "A Data Envelopment Analysis (DEA)-Based Integrated Logistics Network System Design to Improve Supply Chain Efficiency in South Carolina". $439,235, Funded by U.S. Department of Agriculture, 2015-2018, Jae-Dong Hong (PI), Judith Mwakalonge (Co-PI).
- Project Title: "Dwight David Eisenhower Transportation Fellowship Program FHWA, US DOT", $17,500, 2014- 2015, Judith Mwakalonge (PI).
- Project Title: " Physics Guided Quantum Machine Learning for Climate Impacts on Hydrologic Variables", 2025-2028 Under Review, NSF 23-563, National Science Foundation, $448,230, Jai Lee (PI)
- Project Title: "Research Initiation Award: Physics Guided Quantum Machine Learning for Climate Impacts on Hydrologic Variables", 2025-2028 Under Review, NSF 23-563, National Science Foundation, $448,230, Jai Lee (PI).
- Project Title: "Consortium for Nuclear Forensics", Total amount: $ 25,000,000.00, SCSU (sub-award): $739,868, DOE-NNSA, 2023-2028, Musa Danjaji (PI)
- Project Title: "Large Scale Climate Impacts of Historical El Niño Events on Localized Surface temperature over South Carolina", 2023-Current, The Business, Environment, Communication, Transportation Research Institute, $70,000, Jai Lee (PI).
- Project Title: "Plutonium Modernization (PuMP) Grant." $410,000, DOE, 2021-2023, Musa Danjaji (Co-PI)
- Project Title: "Multivariate regression analysis and model development for the estimation of



sediment yield from ungauged river basins over the national watersheds", 2015-2017, National Water Resources Corporation, $248,012, Jai Lee (Co-PI).

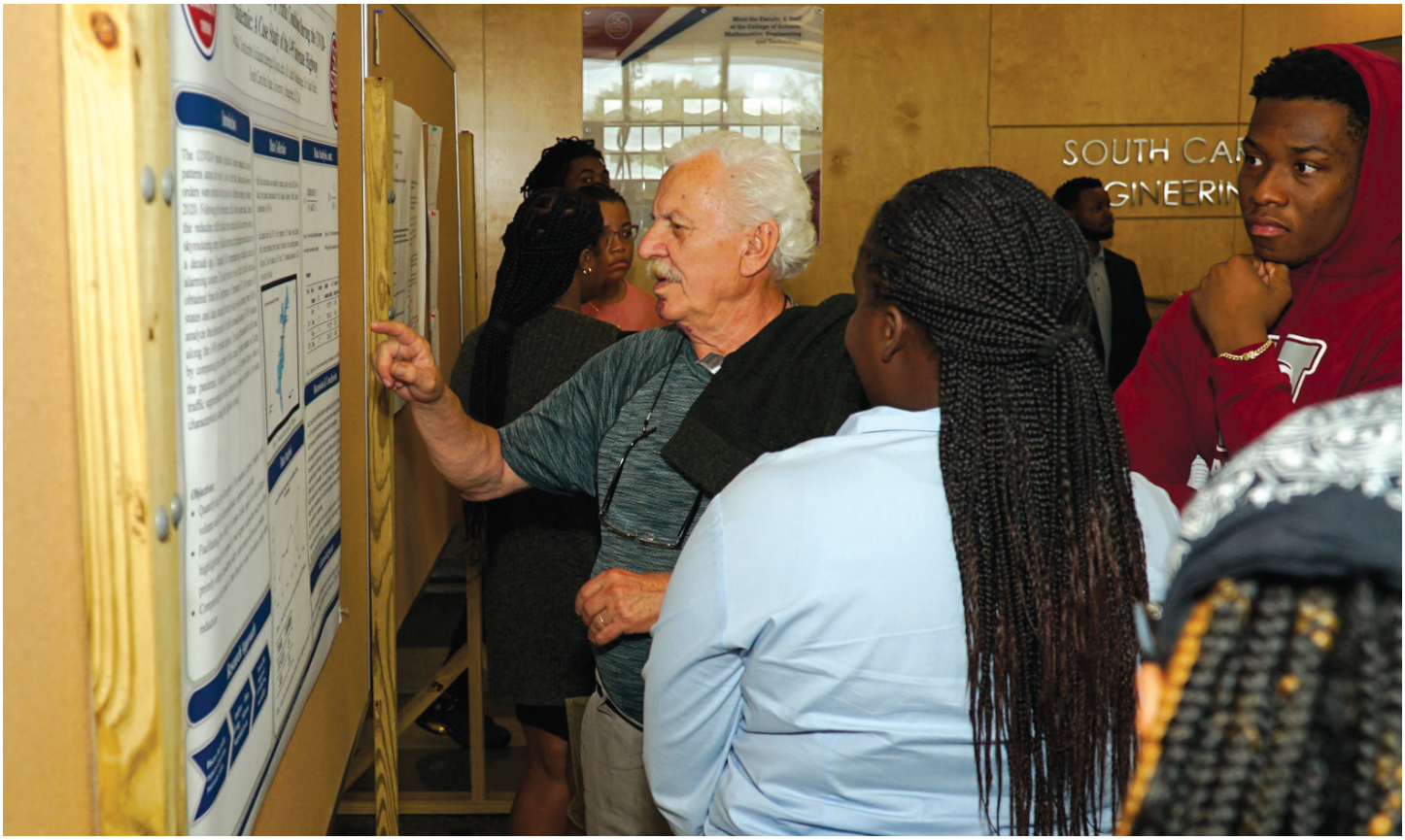
- Project Title: "Minority Science and Engineering Improvement Program (MSEIP)." $732,410, Department of Education, 2019-2023, Musa Danjaji (Co-PI)
- Project Title: "Low Income/Small Scale South Carolina Food Supplier Perceptions of Technology Based Food Safety Approaches". $499,912.05, 1890/USDA/NIFA, 2018-2021, Samuel Littlejohn (PI).
- Project Title: "Workforce Opportunities in Regional Careers II (WORC II)" $410,000, DOE-NNSA 2021-2023, Samuel Littlejohn (PI)
- Project Title: "Tri-State Consortium for Resilient Automation and Cybersecurity System (TRACS)" Total amount: $ 5,000,000.00, SCSU (su)
- Project Title: "South Carolina Clinical and Translational Research Institute (SCTR)" Diandra Randle MUSC/NIH April 1, 2024 March 31, 2025 Total amount: $25,616
- Project Title: "Building an MMS Research and Education Partnership that creates Pathways to astronomy Careers from Two HBCUs (UVI & Clemson)" Don Walter Bio. & Physical Sciences/ Physics "NSF (PARRE Program)" September 1, 2023 August 31, 2027 Total amount: $ 1,269,457
- Project Title: "Space Defense Undergrad Research" Venetia Lyles "Biological & Physical Sciences" "Department of Defense - AFOSR" June 15, 2023 June 14, 2024 Total amount: $ 58,167
- Project Title: Field Station Venetia Lyles "Biological & Physical Sciences" USC/SRS April 7, 2022 April 16, 2025 Total amount: $403,646
- Project Title: "Assessing natural attenuation pathways and completeness for the PCE plume hyporheic zone below CMP Pits, Savannah River Site" John Williams Biological & Physical Sciences BSRA/SRNL August 16, 2024 August 15, 2025 Total amount:
- Project Title: "Conference: Cultivating Cultivating Geoscience Careers Pathways at HBCUs Careers pathways at HBCUs and Women- Only Colleges in South Carolina and Georgia" Venetia Lyles Biological & Physical Sciences / Chemistry "NSF(GRANTED Program" August 1, 2023 July 1, 2024 Total amount: $100,000
- Project Title: Innovating a Community Based Resilience Model on Climate and Health Equity in the Carolinas Florence AnoruoBiological and

Physical Science "NOAA/US Department of Commerce" October 6, 2021 October 5, 2026 Total amount: $ 204,411

- Project Title: "STEM Fluency: Expanding the effectiveness, relevence, equity, and accessibility of online learning of STEM essential skills" Donald Walter Biological and Physical Sciences Ohio State University October 1, 2023 September 30, 2026 Total amount: $18,000
- Project Title: Field Station Operation Venetia Lyles "Biological and Physical Sciences" USC/SCUREF May 23, 2022 May 23, 2023 Total amount: $ 559,178
- Project Title: "Field Station/Preparation Venetia Lyles", Biological and Physical Sciences USC/ SCUREF March 24, 2022 March 23, 2023 Total amount: $66,984
- Project Title: Space Grant Campus Director Jennifer Cash "Biological and Physical Sciences" NASA September 1, 2021 April 14, 2022 Total amount: $4,500
- Project Title: I.M.M. Health Coaches Project "Ashley Audrey" "Evans-Knowell McCrary-Quarles" Biology DHEC November 1, 2023 September 30, 2025 Total amount: $ 1,771,728
- Project Title: "Cultivating Geoscience Careers Pathways at HBCUs" Venetia Lyles "Biology and Physical Sciences" "National Science Foundation (NSF)" April 15, 2024 March 31, 2025 Total amount: $ 100,000
- Project Title: "Role of Calreticulin Acetylation on Trafficking in Prostate Cancer" Courtney Thomas Biology and Physical Sciences National Institutes of Health (NIH) August 1, 2024 July 31, 2029 Total amount: $715,803
- Project Title: SCSU Going4Gold InitiativeJ u d i t h Salley, Ashley Evans-Knowell "Biology and Physical Sciences" "CEO Roundtable on Cancer, Inc." March 1, 2023 February 29, 2024 Total amount: $64,950
- Project Title: HP-Commercial Motor Vehicle Judith Mwakalonge "Civil & Mechanical Engineering" US DOT September 21, 2022 September 20, 2024 Total amount: $1,304,415
- Project Title: "Virtual Prototyping of Ground Systems (VIPR-GS)" Judith Mwakalonge Civil and Mechanical Engineering Department of Defense/ US. Army Contracting Command" March 1, 2022 December 21, 2025 Total amount: $293,855
- Project Title: "Preparing Cyber Warfare Professionals by Integration of Curriculum, Experiences and Internships" Nikunja Swain Computer Science DoD/Office of Navel Research (ONR) February 1, 2023 January 31, 2026 Total amount: $119,994
- Project Title: "Artificially Intelligent Manufacturing Paradigm for Composites (AIM for Composites) (EFCR)" Nikunja Swain, Jagruti Sahoo, Biswajit Biswal Computer Science & Mathematic Subaward Clemson for DOE January 24, 2023 January 23, 2027 Total amount: $275,000
- Project Title: "RII Track-1: ADAPT in SC: AI-enabled" Nikunja Swain Computer Science & Mathematic National Science Foundation (NSF) August 1, 2023 July 31, 2028 Total amount: $170,800
- Project Title: Advancing Cyber Security Nikunja Swain "Computer Science & Mathematic" USC/ NSF May 15, 2023 April 3, 2025 Total amount: $80,750
- Project Title: "Modernizing South Carolina Manufacturing Assets to Enable Industry 4.0" Nikunja Swain Computer Science & Mathematics South Carolina Research Authority July 1, 2021 December 31, 2025 Total amount: $174,886
- Project Title: "Intelligence Community Center Nikunja Swain" Computer Science & Mathematics UNCC/ Defense Intelligence Agency November 17, 2021 November 16, 2026 Total amount: $198,900
- Project Title: "Advancing cyber security technologies for the maritime system (SC)" Nikunja Swain Computer Science & Mathematics June 24, 2024 June 30, 2028 Total amount: $40,375
- Project Title: "Historically Black College and Universities Master's Degree Program (HBCU-MST)" Stanley Judith Ihekweazu Mwakalonge "CSTEM&T Transportation" US DoED October 1, 2023 September 30, 2029 Total amount: $749,005
- Project Title: Workforce Development Samuel Littlejohn Engineering SNRS/DOE September 21, 2022 September 20, 2027 Total amount: $3,103,837
- Project Title: "Consortium for Nuclear Forensics (CNF)" Musa Danjaji Engineering Department of Energy August 1, 2023 July 31, 2024 Total amount: $148,746
- Project Title: "University Nuclear Leadership Program: Scholarship and Fellowship Support"

Joseph Boffie Engineering US Department of Energy (DoE) February 1, 2024 August 31, 2033 Total amount: $3,000,000

- Project Title: "Proposal for the Expansion of Three Engineering Programs: 1. Computer Engineering 2. Electrical Engineering 3. Mechanical Engineering" Stanley Ihekweazu Mechanical Engineering Dominion Energy November 30, 2021 November 29, 2026 Total amount: $1,000,000
- Project Title: "Minority Serving Institutions Partnership Program (MSIPP) Grant" Stanley Ihekweazu Mechanical Engineering US Department of Education November 19, 2022 November 18, 2025 Total amount: $4,000,000
- Project Title: "South Carolina State University - Nuclear Engineering Program Scholarship Support 2024" Joseph Boffie Nuclear Engineering Nuclear Regulatory Com. March 29, 2024 March 28, 2026 Total amount: $199,938
- Project Title: "Research Partnership Workforce Training Programs-Battelle Savannah River Alliance" Elbert R. Malone Office of Sponsored Programs State of South Carolina May 3, 2024 May 3, 2027 Total amount: $8,000,000
- Project Title: "Off-Road Obstacle Detection Analysis for Autonomy-Enabled Ground Vehicle Navigation (VIPR-GS)" Judith Mwakalonge Transportation "Department of Defense (DOD)/ United States Army, December 31, 2023 December 31, 2025 Total amount: $568,511
- Project Title: "National Center for Transportation Cybersecurity & Resiliency (TraCR)" Judith Mwakalonge Transportation "US Department of Transportation (Clemson Univ.)" June 1, 2023 May 31, 2024 Total amount: $200,000
- Project Title: "TRI-State Consortium for Resilient Automation and Cybersecurity System (TRACS)", DOE/National Nuclear Security Administration (NNSA), September 2024 -September 2029, Seeuung Oh, S. Craig Littlejohn. Total Amount: $5,000,000; SCSU Total: $1,100,000.00.



UNDERGRADUATE SCHOLARSHIP

Duke Scholarship

- Noah Davis (Fall 2021)
- Romise Hilliard (Fall 2021)
- Shia Jones (Fall 2021)
- Miranda Moultrie (Fall 2021)
- Luisa Marschhausen Bezerra dos Santos. (Fall 2021)
- Hakeem Bennett (Fall 2023/Spring 2024)
- Ciana Moore (Fall 2023/Spring 2024)
- Dakota Randle (Fall 2023/Spring 2024)
- Makendra Seawright (Fall 2023/Spring 2024)
- Eric Brown (Fall 2023/Spring 2024)

MSIPP Scholarship Recipient (Fall 2024):

- Keyanni Chalmus
- Makayla Chisolm
- Quintrae Haynes
- Kwame Hennagan
- Deante Jackson
- Jerome Robinson
- Brevin Samuel
- Isaiah Thompson

Industrial Engineering Scholarship Recipient:

- Ariyonne Gillespie
- Diego Arzaluz Bonifacio
- Desmond Williams

Boeing Scholarship Recipient:

- William Hickson (Spring 2022: Spring 2023)
- Jerome Robinson (Spring 2023)
- Brevin Samuel (Spring 2023)
- Kenneth Bethea (Spring 2023)

Plutonium Modernization Program Scholarship Recipient (Pump):

- Brevin Samuel (Spring 2022)
- Shabrasia Woodward (Spring 2022)
- Miguel Mack (Spring 2022)
- Ms. Jendayi Brown (Spring 2023)

Graduate Scholarship and Awards

- Arthur Mukwaya: 2025 Lifesavers Traffic Safety Scholar
- Methusela Sulle: 2025 Lifesavers Traffic Safety Scholar / 2024 IBM Masters Fellowship Awardee
- Debbie Indah: 2024 Lifesavers Traffic Safety Scholar
- Hannah Musau: 2024 Lifesavers Traffic Safety Scholar
- Juliana Chengula: 2024 Lifesavers Traffic Safety Scholar/ 2023 IBM Masters Fellowship Awardee
- Andrew Brunner: 2nd Place winner of the Graduate Student Paper Award for 2012/ Transportation Research Forum Foundation
- Jamario White: 2014 Transportation Research Board Minority Fellow, $2000/2013 Graduate Student Scholarship, Lifesavers National Conference on Highway Safety Priorities April 14-16, 2013
- Dennis Burgess: 2013 SCSITE Scholarship Award, $500 - $1000
- Chandani Malla: Outstanding Student Paper Award, 1st place. 2014 SDITE / Best Student Papers

ALUMNI SPOTLIGHT

TERRENCE C. BRIMFIELD – LEADING WITH PURPOSE IN NUCLEAR ENGINEERING

Terrence C. Brimfield, a 2014 graduate of South Carolina State University's Nuclear Engineering program, is a shining example of excellence and leadership in the energy sector. Currently serving as the Design Engineering Manager Lead at the Calvert Cliffs Nuclear Power Plant, Brimfield oversees a team of more than three dozen engineers, ensuring operational safety, regulatory compliance, and innovation at Calvert Cliffs Clean Energy Center. His career spans critical roles at the U.S. Nuclear Regulatory Commission and Entergy, where he contributed to major plant safety initiatives and led the development of advanced nuclear analysis methodologies.

Mr. Brimfield's journey from a U.S. Air Force Staff Sergeant to a leader in the nuclear industry is both inspiring and instructive. He attributes much of his success to the rigorous academic foundation and mentorship he received at SC State. Beyond his technical achievements, Brimfield remains committed to service, mentoring young professionals and representing Black excellence in engineering through organizations like Alpha Phi Alpha Fraternity, Inc., American Nuclear Society, and the American Association of Blacks in Energy. His story is a testament to SC State's enduring impact in shaping leaders who drive progress across industries.

TRASHOAN CAIN – MANUFACTURING ENGINEER I AT M.E.P

Trashoan Cain, a 2022 graduate of South Carolina State University's Mechanical Engineering Technology program, began his career as an Associate Manufacturing Engineer at Marley Engineered Products. After just two years, he was promoted to Manufacturing Engineer I, a testament to his work ethic and technical skill.

In his current role, Trashoan focuses on improving production line efficiency and implementing lean manufacturing principles. He collaborates with cross-functional teams, using shop floor data to identify bottlenecks and recommend process improvements. With a solid foundation in CAD software, Six Sigma concepts, and a strong desire to grow, Trashoan has made significant contributions early in his career.

The transition from college to industry has been both exciting and challenging. He is quickly learning the value of clear communication, adaptability, and teamwork in a fast-paced manufacturing environment. Beyond technical tasks, his role requires collaboration with technicians, engineers, and supply chain managers to ensure product consistency and cost-effectiveness. Every day brings new problem-solving opportunities and Trashoan embraces each one with enthusiasm and determination.

ALUMNI SPOTLIGHT

Robert (left) with RayQuan '25 (2nd) and SCDOT colleagues

ROBERT A. LOPEZ – GEOTECHNICAL ENGINEER II, SCDOT

Robert A. Lopez, a 2024 graduate of South Carolina State University's Civil Engineering program, currently serves as a Geotechnical Engineer II with the South Carolina Department of Transportation in Columbia. In this role, he specializes in deep foundation design for transportation infrastructure across the Low Country region—work that supports the structural integrity of roads, bridges, and public systems vital to the state's growth.

Reflecting on his journey, Lopez credits S.C. State for laying the groundwork for his early professional success. "The Civil Engineering curriculum gave me a strong technical foundation and allowed me to quickly earn my Engineer-in-Training (E.I.T.) certification," he shares. "Just as importantly, the mentorship I received from my professors continued well beyond graduation and helped guide me toward a field with meaningful long-term opportunities."

Lopez emphasizes that the strength of S.C. State's engineering program goes beyond academics. "Being part of this community connects me to a network of fellow graduates working across South Carolina in both the public and private sectors.

NURAN-NAHAAR ABDUS-SALAAM - EMBARKS ON PH.D. JOURNEY AT UNIVERSITY OF SOUTH CAROLINA

Nuran-Nahaar Abdus-Salaam, a graduate of South Carolina State University (SCSU) with a B.S. in Chemistry, is entering her 4th year of Ph.D. studies in Biochemistry at the University of South Carolina. While at SCSU, she spent much of her time conducting research in Dr. Nasrollah Hamidi's lab, focusing on post-consumer plastic recycling. It was in this lab that her passion for research truly began to take shape. "I started to see myself not just as a student, but as a scientist," she says.

Her undergraduate journey also included an SCSU-facilitated competitive summer research program at the University of Oxford, where she spent two months working alongside international scientists. These formative experiences, both at home and abroad, were deeply inspiring, but it was the consistent support from SCSU faculty that made the biggest impact. Dr. Hamidi, Dr. Courtney Thomas, Dr. Rahina Mahtab and Dr. Venetia Lyles were particularly influential. "They never led me by the hand, but they matched my commitment every step of the way," Nuran-Nahaar recalls. "All the faculty at SCSU treated my growth as a researcher as something worth investing in."

Now, as a doctoral student, she is pursuing research at the interface of chemistry and biology, studying metal-binding proteins in a fungal system. Her path from SCSU's chemistry labs to graduate-level research underscores the transformative power of the mentorship, opportunity, and self-belief given to her at SCSU.

ALUMNI SPOTLIGHT

DR. IMMANUEL GARVIN D.C. – PROVIDING A FRESH TAKE ON CHIROPRACTIC MEDICINE

Dr. Immanuel Garvin D.C., owner and founder of Garvin Family Chiropractic & Holistic Wellness Center, is a 2020 graduate of South Carolina State University's Biology program, is a stellar example of focus and determination. Dr. Garvin attributes his success to South Carolina State University, which laid the foundation for the evidence-based practitioner he is today. He earned his Bachelor of Science in Biology with a minor in Chemistry in 2020 and had the opportunity to engage in minority cancer research for two years through INBRE and LS-SCAMP. Dr. Garvin also served as a LS-SCAMP tutor and a BAPS student ambassador.

These experiences strengthened his understanding of research and its role in delivering evidence-based care, inspiring him to expand his knowledge in health, driving him to further his education at Palmer College of Chiropractic, where he earned his Doctor of Chiropractic Degree.

Today, Dr. Garvin is the owner and lead chiropractor at Garvin Family Chiropractic & Holistic Wellness Center in Jacksonville, FL, where they provide chiropractic care, soft tissue therapy, rehab, and support for athletic recovery and sports performance.

Dr. Garvin attributes SCSU and its BAPS department for blessing him with much-needed camaraderie and lifelong friendships. The faculty and staff created an environment that made learning meaningful and impactful. SCSU didn't just prepare him for a career, it helped to shape his mindset, work ethic, and calling. Dr. Gavin says he carries those values into every patient interaction.

DEVIN MCKENZIE – PROJECT ENGINEERING

Devin McKenzie graduated with a Bachelor of Science degree in Industrial Engineering from South Carolina State University in May 2023. Devin has stated that Dr. Hong and Dr. Littlejohn (two of the Industrial Engineering faculty) had a significant impact in his success as a student. They did this by primarily providing encouragement and mentoring. They helped him to understand the process of being a successful engineer (both academically and professionally).

After graduation in 2023, Devin began work as a Bridge Construction Engineer with the South Carolina Department of Transportation in Charleston, South Carolina. He is currently a Project Engineer for Southern Industrial Contractors, which is a leading provider of turnkey industrial construction and plant maintenance services. As a Project Engineer with Southern Industrial Contractors, Devin is currently involved with building a pharmaceutical plant in Clayton, North Carolina. Devin stated that he loves his work and plans to be an engineer for the rest of his career.

LIST OF DEGREE PROGRAMS IN CSTEM-T

Master of Science Degree Programs

DEPARTMENT OF ENGINEERING

- Master of Science in Transportation

DEPARTMENT OF BIOLOGICAL AND PHYSICAL SCIENCES

- Master of Science in Physics in Collaboration with Clemson University

Bachelor of Science Degree Programs

DEPARTMENT OF ENGINEERING TECHNOLOGY

- Bachelor Of Science In Industrial Technology
- Bachelor Of Science In Electrical Engineering Technology
- Bachelor Of Science In Mechanical Engineering Technology

DEPARTMENT OF ENGINEERING

- Bachelor Of Science In Civil Engineering
- Bachelor Of Science In Industrial Engineering
- Bachelor Of Science In Mechatronics Engineering
- Bachelor Of Science In Nuclear Engineering

DEPARTMENT OF BIOLOGICAL AND PHYSICAL SCIENCES

B.S. in Biology

- Bachelor Of Science In Biology, environmental science minor
- Bachelor Of Science In Biology, concentration in applied oncology honors sciences

B.S. in Chemistry

- Bachelor Of Science In Chemistry concentration in Radiochemistry
- Bachelor Of Science In Chemistry, environmental science tract
- Bachelor Of Science In Chemistry, pre-health tract
- Bachelor Of Science In Chemistry, graduate school tract

BS in Physics

- Bachelor Of Science In Physics with Medical Physics Option
- Bachelor Of Science In Physics with Health Physics Option
- Bachelor Of Science In Physics with Astronomy Option
- Bachelor Of Science In Physics in Collaboration with Clemson University

DEPARTMENT OF COMPUTER SCIENCE AND MATHEMATICS

- Bachelor Of Science In Computer Science
  - Minor in Robotics and Embodied Intelligence
- Bachelor Of Science In Cybersecurity
- Bachelor Of Science In Computer Science with Concentration In Cybersecurity
- Mathematics Education Program
- Double Major in Mathematics and Computer Science (5 Years)

BULLDOG CHAPTER OF THE AMERICAN CHEMICAL SOCIETY (ACS)

The Bulldog Chapter of the American Chemical Society (ACS) at South Carolina State University is a vibrant and active student organization within the STEM-T College, open to all majors but proudly led by Chemistry majors. Guided by faculty mentors Dr. Courtney Thomas and Ms. Britney White, the chapter currently boasts approximately 30 student members who are passionate about making chemistry accessible, exciting, and engaging. Our mission is to demonstrate that chemistry is everywhere—whether through hands-on experiments or community outreach. We host a range of fun and educational campus events such as Mole Day (October 23) and Pi Day (March 14), and we proudly participate in university traditions like the Homecoming Parade, Clubs and Organizations Day, and Trunk or Treat.

Beyond campus, the ACS Bulldog Chapter is committed to making a meaningful impact in the broader Orangeburg County community. Members regularly volunteer at Felton Laboratory Charter School, conducting chemistry demonstrations and assisting in science classes to spark curiosity and enthusiasm among elementary and middle school students. Additionally, our students have opportunities to travel and present research at regional and national scientific conferences, further connecting their classroom knowledge to real-world STEM work. Through service, scholarship, and outreach, the ACS Bulldog Chapter plays a dynamic role in promoting STEM education and inspiring the next generation of scientists.

Members of the E-board attending the Organization Fair day on campus

ANS STUDENTS' SECTION YEAR IN REVIEW 2024-2025

The 2024-2025 academic year signaled a new beginning for the South Carolina State University (SCSU) Student Section of the American Nuclear Society (ANS). The chapter made a strong come back in the spotlight of student organizations. For the year in review, the student body performed several activities. Some of the most salient ones are highlighted below:

Visit of the American Nuclear Society President: One of the most impactful moments this year was the visit from the President of the American Nuclear Society. The visit symbolized national support for our chapter and highlighted SCSU's growing presence in the nuclear field. During the visit, key discussions focused on the future of nuclear energy and opportunities for students to become more involved in research and internships. Students were able to ask questions, share their goals, and receive guidance directly from a national leader in nuclear science.

American Nuclear Society President Lisa Marshall with Nuclear Engineering Faculty and Students

The inductees with the ANS Faculty Advisor and Engineering Chair

Alpha Nu Sigma Honor Society Induction Ceremony: In December 2024, SCSU proudly hosted an induction ceremony for the Alpha Nu Sigma Honor Society, welcoming four exceptional students: Aniya Ziegler, Makendra Seawright, Hakeem Bennett, and Katelyn Williams to the Society. Alpha Nu Sigma honors students - seniors and juniors, who have demonstrated academic excellence in nuclear science and engineering. Their induction marks both a personal achievement and a milestone for the establishment of nuclear-focused recognition at SCSU.

ANS Grant for Restarting Student Section: The SCSU ANS section was awarded a Three Hundred Dollar Grant from the national American Nuclear Society. This special grant is awarded to chapters that are newly formed or restarting after a period of dormancy. This grant represents a key investment in our revival and future sustainability. The funds will be used to host an on-campus engagement event designed to introduce more students to nuclear science and engineering and build awareness of the opportunities available through ANS. The event will include interactive activities, all with the goal of growing membership and expanding interest in nuclear careers.

INDUSTRIAL ENGINEERING FACULTY AWARD WINNING RESEARCH

Jae-Dong Hong

Industrial Engineering Program

In the competitive contemporary world, every organization tries to gain a competitive edge. To achieve this, managers need to consider and analyze the performance of their organisations and decide how to improve it. Data envelopment analysis (DEA), a mathematical programming technique, is a popular approach for that purpose.

DEA has been widely used in various areas related to Industrial Engineering to assess the relative efficiency of a group of decision-making units (DMUs). Hong and Jeong (2019) combine the DEA and multi-objective facility location-allocation (FLA) model to find productive FLS schemes. This paper is considered the first one to integrate the DEA and multi-objective methodology. Hong and Mwakalonge (2020) apply this approach to designing the biofuel logistics network scheme. This research paper was nominated for the Best Research Award by ScienceFather.

As DEA becomes one of the most popular methods, there has been an exponential rise in theoretical development and diverse applications. However, the crucial issues with DEA-based methods are that they require excessive computational time for a large set of DMUs, as well as poor discriminatory power and inconsistent ranking results. A decisive or universal DEA model has yet to come.

Realizing these issues, Hong (2024) presents his Best Conference Paper Award-winning paper titled "An integrated efficiency evaluation approach with stratification-DEA and data clustering method" at the 2024 SWDSI conference. This paper presents a new procedure for integrating S-DEA with the data clustering method to overcome the intrinsic weaknesses of DEA-based models. Numerical examples demonstrate that the proposed approach significantly enhances the evaluation and ranking of DMUs compared to the original techniques.

The most significant contribution of this paper is that the proposed method motivates researchers associated with DEA to move beyond the traditional DEA framework, which requires complex formulations and lengthy computational times. Therefore, they can develop better methodologies for evaluating and ranking DMUs without being limited to DEA-based formulations and evaluations. Hong is researching to create a better evaluation methodology based on this paper.

REFERENCE

Hong, J. and Jeong, K. (2019). Combining Data Envelopment Analysis and Multi-Objective Model for the Efficient Facility Location-Allocation Decision. Journal of Industrial Engineering International, 15, 315-331.

Hong, J. and Mwakalonge, J. (2020). Biofuel Logistics Network Scheme Design with Combined Data Envelopment Analysis Approach (Nominated for Best Research Award). Energy, 209, 118342.

Hong, J. (2024). An Integrated Efficiency Evaluation Approach with Stratification-DEA and Data Clustering Method (Best Conference/Distinguished Paper Award). Proceedings of the 2024 Annual Meeting of the SWDSI, Galveston, TX, April 4-6, 2024.

CSTEM-T RESEARCH FUNDING

The College of Science, Technology, Engineering, Mathematics and Transportation (CSTEM-T) performs many different types of research. As of Spring 2025, South Carolina State University has been classified as a Research Two Activity Designation university. The designation is made by the American Council on Education (ACE) and the Carnegie Foundation for the Advancement of Teaching. This is the first time in the history of the university that it has been given this designation. For a university to receive a Research Two designation, it must have $5 million in research spending and 20 research doctorates awarded annually. This information can be found on the Carnegie Classification of Institutions of Higher Education website.[1] In 2023, the university spent $7.8 million in research and awarded 25 doctoral degrees.

CSTEM-T has been a significant contributor to the research efforts of the university. The total amount of research funding from 2021 – 2024 is: $28,991,452.00. This value includes the total values of projects, some of which are ongoing and are scheduled to end between 2025 and 2027. The various projects during this time frame include work lead by and performed by faculty in each of the CSTEM-T departments:

- **Engineering**
- **Computer Science & Mathematics**
- **Engineering Technology**
- **Biological & Physical Sciences**

This includes research activities (both within individual disciplines and interdisciplinary) across a variety of degree programs within the CSTEM-T. These areas include:

- Industrial Engineering
- Chemistry
- Cyber Security
- Nuclear Engineering
- Physics
- Biology
- Transportation
- Civil Engineering
- Mechanical Engineering Technology

Some research done in CSTEM-T fall under the scope of one of the following centers at South Carolina State University: the National Center of Academic Excellence in Cyber Defense, the Center of Applied Artificial Intelligence for Sustainable Agriculture, the Center for Energy and Environmental Solutions, the Center for Nuclear Criticality, Radiochemistry and Spectroscopy, Health Equity Research and Training Center (HERT-C), the Center for Food Safety & Health, the Center of Plant Breeding, Genetics and Genomics, the Savannah River Environmental Sciences Field Station, and the South Carolina State University Transportation Center.

[1]*Carnegie Classifications Release 2025 Research Activity Designations, Debut Updated Methodology. February 13, 2025. Carnegie Classification of Institutions of Higher Education. https://carnegieclassifications.acenet.edu/news/carnegie-classifications-release-2025-research-activity-designations-debut-updated-methodology/*

NEW E2 CENTER ESTABLISHED AT SOUTH CAROLINA STATE UNIVERSITY

On Wednesday, May 21st, 2025, a ribbon cutting ceremony to dedicate the newly installed NuScale Nuclear Reactor Simulator laboratory in the Engineering and Computer Science Complex was performed. The simulator was the tenth to be installed worldwide, sixth in the United States and the first in the State of South Carolina. This facility provides SCSU nuclear engineering students with the opportunity to conduct realistic simulations of advanced reactor operations and potential accident scenarios in a safe and controlled environment.

SCSU President: COL (Ret.) Alexander Conyers, Associate Provost for Sponsored Programs: Mr. Elbert Malone, Dean of CSTEM-T: Dr. Stanley Ihekweazu, Chair of Engineering: Dr. Musa Danjaji and other Dignitaries

What is an E2 Center?

The Energy Exploration (E2) Center is an innovative learning environment that offers users a hands-on opportunity to apply nuclear science and engineering principles through simulated, real-world nuclear power plant operation scenarios.

How an E2 Center Works:

Using state-of-the-art computer modeling within a 12-module power plant control room simulator, the E2 Center allows users to assume the role of control room operator. Each workstation is able to view the status of any of the 12 units within the model.

"This is an exciting moment for SC State. The NuScale Energy Exploration Center gives our students a front-row seat to the future of clean energy. It's not every day you get to bring a virtual nuclear reactor into the classroom. That kind of access can spark curiosity, open career paths, and change lives. This partnership brings world-class tools to our campus, supports our growing research mission as an R2 institution, and underscores the vital role HBCUs (historically Black colleges and universities) play in driving innovation across the country. It also strengthens our pipeline for workforce development with partners like the Battelle Savannah River Alliance, preparing our students to lead in one of the nation's most critical industries." Alexander Conyers, President, SC State.

"The NuScale Energy Exploration Center is a game changer for SC State. It will allow students to safely explore complex systems, gain hands-on experience, and develop critical thinking skills in a realistic, immersive environment. This kind of innovative training not only deepens understanding but also prepares students for the workforce and inspires the next generation of nuclear scientists and engineers." Dr. Frederick Evans, SC State Provost and Vice President for Academic Affairs.

"The E2 Center raises the bar for how students are trained. It transforms how we prepare future engineers — moving beyond textbooks to immersive, industry-standard training. This kind of access not only strengthens our nuclear engineering program but also empowers our students to lead in a field that is vital to our nation's energy future." Dr. Stanley Ihekweazu, Dean of CSTEM-T.

"The E2 Center gives students "a unique opportunity to apply classroom knowledge in a realistic setting. Through interactive training, students learn to operate a reactor, monitor systems, and respond to emergency scenarios. Such skills are critical to careers in the nuclear energy sector. The experience students get strengthens their safety awareness, decision-making abilities, and teamwork under pressure. Graduates who undergo simulator training are well-equipped for careers in plant operations and nuclear systems engineering." Dr. Musa Danjaji, Chair of Engineering.

SCSU Nuclear Engineering Students at the Energy Exploration Center

SCSU CELEBRATES INAUGURAL ORDER OF THE ENGINEER CEREMONY

In May 2025, the engineering department celebrated its inaugural Order of the Engineer (OOE) ceremony. The OOE is a solemn ring ceremony for graduating or practicing engineers who voluntarily commit to the Obligation of an Engineer—a formal pledge to uphold the highest standards of honesty, integrity, and professional ethics in their work. The ceremony serves as a reminder of the engineer's responsibility to society, the profession, and fellow engineers. The individuals are generally expected to be graduates or graduating seniors of an ABET-accredited engineering program.

As a symbol of this commitment, participants receive a stainless-steel ring worn on the little finger of the working hand, so it touches all drawings, designs, and documents they create. The ring acts as a tangible reminder of their duty to the public and the ethical practice of engineering.

Inductees take the oath

Conducting the ceremony were the Dean of CSTEM-T: Dr. Stanley Ihekweazu; Chair of Department of Engineering: Dr. Musa Danjaji; Head of the Department of Electrical and Computer Engineering at The Citadel: Dr. Mark McKinney; SCSU Engineering Faculty: Dr. Jai H. Lee and Dr. Joseph Boffie. Family and Friends of the inductees were present. The inaugural ceremony saw the induction of nine 2025 graduating engineers. Pictures of the ceremony are displayed.

Inductees with Dean Ihekweazu

Inductees with Dr. McKinney (center)

Inductees with SCSU Faculty

Ring Presentation with Zyon (Left) and Daisha (Right).

Inductees with Family and Friends

2025 ORDER OF THE ENGINEER INDUCTEES:

CIVIL ENGINEERING

Zyon N. Addison

RayQuan P. Harrison

Mehki T. Nesmith

Jaylen J. Roberts

Daisha R. Smith

INDUSTRIAL ENGINEERING

Jerome Robinson Jr.

Brevin Samuel

NUCLEAR ENGINEERING

Eric Brown Jr.

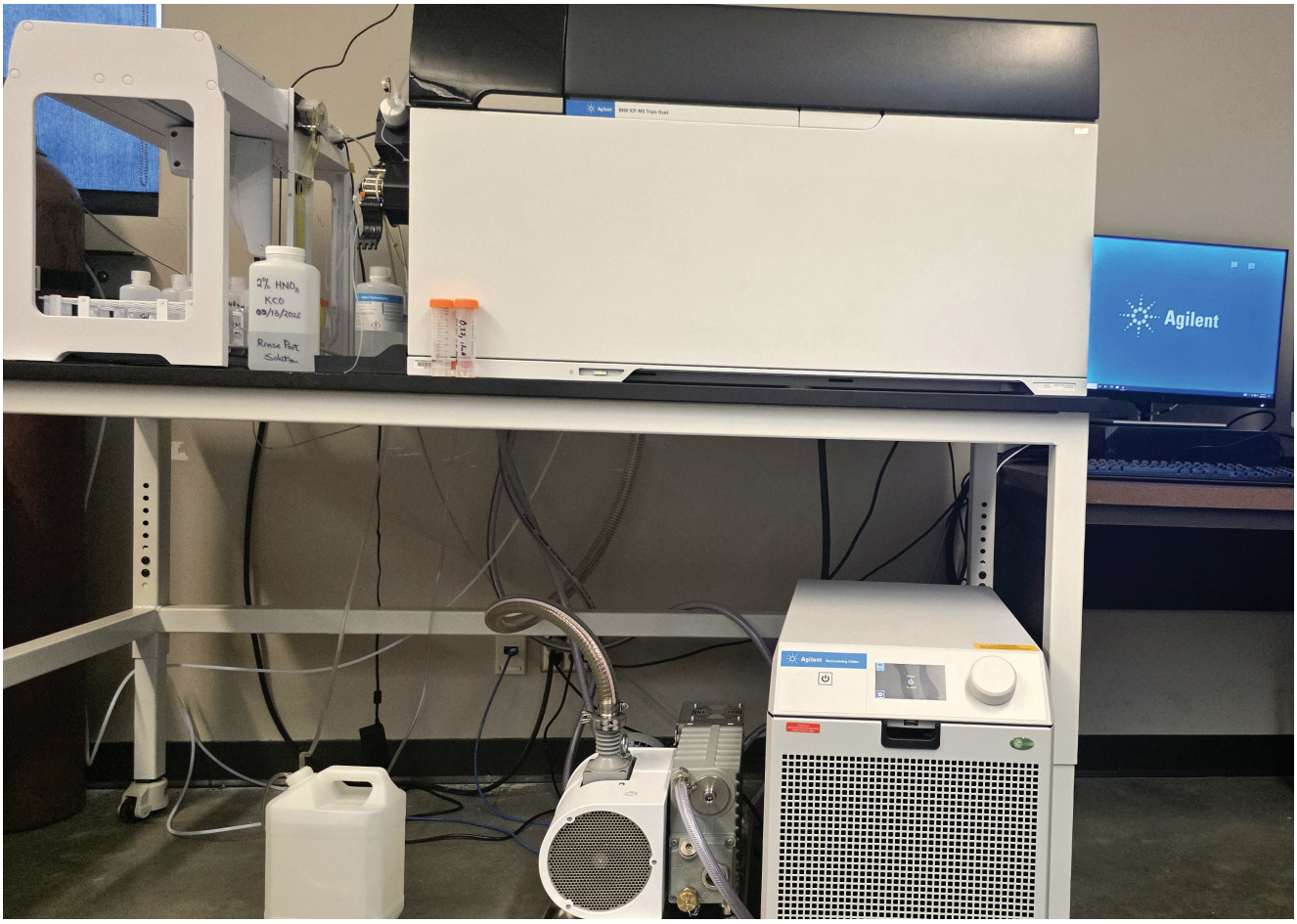
Katelyn J. Williams

RADIATION SCIENCE LABORATORY UPGRADE

The radiation science laboratory in the nuclear engineering program have recently upgraded their laboratory with the addition of two new state-of-the-art equipment.

Inductively Coupled Plasma Mass Spectrometry (ICP-MS): An ICP-MS is an advanced analytical instrument used for detecting trace elements and isotopic compositions in various samples, including environmental and nuclear materials; down to parts per trillion (ppt) or lower.

The integration of the ICP-MS instrument into the SCSU Nuclear Engineering Program offers a unique and valuable opportunity for students to engage with real-world analytical techniques widely used across the nuclear industry. It elevates the quality of both instruction and undergraduate research, ensuring that graduates are equipped with practical skills and scientific literacy necessary for success in a competitive and highly regulated field.



The Agilent 8900 Triple Quadrupole Inductively Coupled Plasma Mass Spectrometer

Liquid Scintillation Counter (LSC): The LSC is a specialized instrument used for the detection and quantification of low-energy beta-emitting radionuclides. The LSC will enhance the program's capacity to provide students with hands-on laboratory experience in radiation measurement techniques that are fundamental to nuclear science, health physics, and environmental monitoring.

This is a critical laboratory instrument that will be used in the Nuclear Engineering Program to support student achievement of several ABET-defined Student Outcomes. Through guided instruction, and hands-on laboratory experiments, students can develop both theoretical understanding and practical skills related to radiation detection and measurement..

The revvity Liquid Scintillation Counter

SOUTH CAROLINA STATE UNIVERSITY-SOCIETY OF PHYSICS STUDENTS (SPS)

The Society of Physics Students (SPS) at South Carolina State University (SCSU) has been recently revived by an energetic cohort of students who welcome anyone with an interest in physics and astronomy. This group of approximately 20 students is led by faculty advisor Dr. Jennifer Cash and consists largely of physics majors and minors, but also includes others from chemistry, engineering and even business and education. SPS is helping raise awareness of the fun and excitement of the field of physics through outreach activities, such as hosting a viewing table on the Student Plaza during the partial solar eclipse in April 2024, including distributing thousands of solar viewing glasses across the campus to students, staff and faculty.

We meet three times each semester and engage in hands on activities, such as building circuits to run solar-powered devices, observing the night sky through binoculars and telescopes and taking field trips to nearby medical and industrial sites. Future plans include collaborating with the Model Rocket Club to build and launch rockets. We partner with the NASA Space Grant Program to spread the word at local K-12 schools about the wonder of space and science. In the spring we host a "Physics Day" on the SCSU campus where students and faculty participate in games and demonstrations that show physics is both exciting and impacts our everyday life.

Physics students and faculty visit the only proton accelerator for proton beam therapy in the Carolinas, located at the Levine Cancer Institute in Charlotte, North Carolina.

ONLINE COURSES AND DEGREES IN CSTEM-T

South Carolina State University's Center for Online Distance Education (CODE) division is the administrative center for online educational offerings at the university. CODE facilitates work in four areas:

1. Online and Distance Education
2. Faculty Development
3. Continuing Education
4. Blackboard Learning Management System

EDsmart ranked South Carolina State University as one of the top twelve best accredited online colleges for 2024 for the state of South Carolina. (The edsmart.org website states that the primary focus of EDsmart is to guide learners to the most valuable online degrees, ensuring they reap the maximum benefits from their investments in education.)[1]

South Carolina State University offers a wide variety of online courses. The College of Science, Technology, Engineering, Mathematics and Transportation (CSTEM-T) currently provides various fully online courses for students. Those courses are:

- Biological Sciences I-Lab, BSC 151
- General Chemistry, C 150
- General Chemistry Lab, C 151
- Computer Technology, CS 150
- Fundamentals of Cybersecurity, CSM 188
- Technical Communication, EAET 250
- Engr Economic Analysis, EAET 255
- System Design I, IENG 201
- Industrial Statistics, IENG 253
- Engineering Modeling and Simulation, IENG 355
- Operations Research II, IENG 454
- Supply Chain Engineering Management, IENG 456

Currently the CSTEM-T is working towards increasing the number of online courses that it offers to South Carolina State University students. Two of the courses that are being prepared for the initial online offering for the Spring 2026 semester are: EAET 150, Mechanical Drawing and ENGR 212, Statics. The cyber security program is working on completing a Master of Science in Cybersecurity online degree. There are also other courses that the college (CSTEM-T) is looking to prepare as online offerings over the next two to three years.

To facilitate these activities, a committee within the CSTEM-T was created during the Spring 2025 semester called: The Online Courses and Degree Programs Committee. The CODE division is working closely with this committee in order to work with participating faculty to ensure that all new courses meet the university requirements for certified online course and degree program offerings. The university requirements are based on Quality Matters standards. As stated on the Quality Matters website, "Quality Matters is the global organization leading quality assurance in online and innovative digital teaching and learning environments."[2]

REFERENCE

1. EDsmart, Accessed on May 20, 2025, Best Online Colleges South Carolina 2024, EDSmart, https://www.edsmart.org/accredited-online-colleges/south-carolina/
2. Quality Matters, Accessed on May 20, 2025, About QM, Quality Matters, https://www.qualitymatters.org/why-quality-matters/about-qm

SCSU CIVIL ENGINEERING TEAM TRIUMPHS AT 2025 ASCE CAROLINAS STUDENT SYMPOSIUM

South Carolina State University's (SCSU) Civil Engineering students achieved outstanding success at the 2025 ASCE Carolinas Student Symposium, held April 10–12 at Clemson University. Among nine universities and over 250 students from North and South Carolina, SCSU secured top honors in two major events and earned a strong placement in a third.

In the Concrete Bat competition—where teams build a full-length concrete baseball bat adhering to strict dimensions and reinforced with a single steel rod—SCSU claimed first place. Using Ultra-High-Performance Concrete (UHPC) with a low 0.18 water-to-cement ratio and fiber reinforcement around the steel bar, the bat excelled both in design evaluation by judges and performance in the home-run derby. Both student batters completed all ten swings, delivering the farthest total distance, and the exemplary craftsmanship earned top design marks.

Simultaneously, SCSU took first place in the Geotechnical competition after months of strategic prep, further demonstrating their depth of knowledge and practical engineering skills. In Quiz Bowl Session 2, the team placed third, rounding out their impressive performance.

The team featured five students—ASCE Chapter President Jaylen Roberts (senior), Vice-President Idris Uqdah (sophomore), Treasurer Alyssa Davis Hudson (sophomore), member Jeffery Ellis (junior), and Secretary Jayden Briggs (junior)—alongside faculty advisors Dr. Jai Hong Lee and Dr. M. Shariful Islam.

Roberts reflected: "Competing in the 2025 ASCE Carolinas Symposium was an incredible opportunity for us to represent not only our Civil Engineering program but the University as a whole. To outperform prestigious institutions like Duke, Clemson, NC State, and more was extremely gratifying and is a testament to the dedication of our students, faculty, and staff."

Dr. Lee added: "This competition served not only as a platform to demonstrate technical expertise and innovation, but also as a means to inspire the next generation of engineers. As an advisor to the SCSU Civil Engineering students, I was privileged to support their growth, enrich their educational journey, and contribute to the pursuit of engineering excellence. I am extremely proud of our team—especially given its small size—and of Dr. Islam's role in guiding the development of the concrete bat. I wholeheartedly recommend participation in the ASCE Carolinas Student Symposium to all civil engineering students and faculty."

This was SCSU's first participation in the Symposium in over a decade, and their success underscores the strength of their civil engineering program and collaborative spirit.

CSTEM-T STUDENT ORGANIZATIONS AND EXECUTIVES (2025-2026)

ASCE:

Organization: American Society of Civil Engineers

Executives:
Alyssa Davis-Hudson, President

Idris Uqdah, Vice President

Rita Kelly, Secretary

Office: Engr Building Room 153

Faculty advisor: Jai Hong Lee

e: ascepresidentscsu@gmail.com

e: jlee26@scsu.edu

NSBE:

Organization: National Society of Black Engineers

Executives:
Alyssa Davis-Hudson, President

Khmari Washington, Vice President

Jamal Wigfall, Parliamentarian

Martin Hare Jr, Treasurer

Joshua Jackson, Membership chair

Office: Engr Building Room 152

Faculty advisor: Valerie Nwandyi

e: nsbeprezz@gmail.com

e: adavishu@scsu.edu

ANS:

Organization: American Nuclear Society – SCSU Students Section

Executives:
Aniya Ziegler, President

Katelyn Williams, Vice President

Zadok Tasoh, Communication

Joshua Jackson, Treasurer

Jasmine Henderson, Secretary

Faculty advisor: Joseph Boffie

e: ans.scsu@gmail.com

e: jboffie@scsu.edu

ACS:

Organization: American Chemical Society

Executives:
Kandace Rankin, President

Taylore Reed, Vice President

Nehemiah Smith, Treasurer

Kyla Perrineau, Secretary

Faculty advisors: Courtney Thomas and Britney White

e: Cthoma17@scsu.edu

e: Bwhite8@scsu.edu

SPS:

Organization: The Society of Physics Students (SPS)

Executives:
TBD, President

TBD, Vice President

TBD, Communication

TBD, Treasurer

TBD, TSecretary

Faculty advisor: Dr. Jennifer Cash

e: jcash@scsu.edu

HPS:

Organization: Health Professions Society (HPS)

Executives:
Payton Abney , President

Atalia Lee, Vice President

Kaitlyn Pickney, Communication Director

Tamara Keller, Treasurer

Iyana Hurley, Secretary

Zadaria Watson, Chaplain

Mr. HPS, Jordon Moorer

Miss HPS, Damaya Mayers

Faculty advisor: Dr. James Stukes

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e: pabney@scsu.edu

e: ihurley@scsu.edu

ASK THE EDITORS – Q AND A TIME WITH OUR EDITORS

What's your favorite part about working with students at SCSU? (Boffie)

Answer: SCSU students are special because of their drive and authenticity. They connect deeply when they sense you care about their success. As a CSTEM-T engineering faculty member, I find it rewarding when not only engineering majors, but also students from other STEM disciplines seek my support and guidance. Whether it's a request for a recommendation, help understanding a concept, or just life advice, those interactions reflect the trust and community that define SCSU.

At SCSU, mentorship extends beyond the classroom. It's about building relationships that help students navigate not just their academic journey, but their future paths as professionals and leaders.

How does your field impact our nation and community or state — and how can students make a difference? (Boffie)

Answer: Engineering and STEM as a whole, play a pivotal role in solving society's most pressing challenges, from energy and infrastructure to healthcare and national security. In particular, the field of nuclear engineering is regaining momentum in what many are calling a "nuclear renaissance." This renewed interest is driven by the surging energy demands of AI-driven data centers, the rise of electric vehicles, and our collective push for cleaner, more sustainable power sources.

South Carolina is uniquely positioned in this transformation. It ranks third in the nation for nuclear power production, with four operational nuclear plants generating about 50% of the state's electricity. The state is also home to the Savannah River National Laboratory, a hub for nuclear innovation and national defense.

However, the current nuclear workforce is aging, and the demand for skilled professionals is growing rapidly. A recent U.S. Department of Energy report projects that 375,000 new workers will be needed to construct and operate 200 gigawatts of advanced nuclear reactors by 2050.

This is where students come in. Whether in engineering, computer science, or environmental science, CSTEM-T students have a unique opportunity to drive the future of clean energy, national security, and technological innovation. Their contributions will not only serve South Carolina but also have a lasting impact on the nation and the world.

What motivates you? (Boffie)

Answer: As an academician, I am deeply motivated by both the imparting and acquisition of knowledge. These twin pursuits have consistently guided my day-to-day activities since I entered academia. The opportunity to engage with students, whether through classroom instruction, research collaboration, or mentorship, continually fuels my passion for teaching and learning. Beyond the daily interactions, I find lasting motivation in the success stories of our graduates. Their achievements, many of which are highlighted in this magazine, serve as a powerful form of feedback, reinforcing the impact of our work and completing a meaningful loop of education, growth, and contribution.

What makes CSTEM-T at South Carolina State University unique and meaningful to you as a faculty member? (Boffie)

Answer: The College of Science, Technology, Engineering, Mathematics, and Transportation (CSTEM-T) stands out for its strong culture of collaboration across departments. This synergy enhances interdisciplinary teaching, research, and outreach, making it a dynamic environment for both faculty and students. CSTEM-T consistently attracts research grants, playing a key role in South Carolina State University's designation as an R2 research institution.

One of the college's greatest strengths is its active engagement with its Industrial Advisory Council (IAC), which includes industry leaders, government officials, and national lab experts. The IAC meets with the college twice a year to review educational objectives, provide strategic feedback, and align academic programs with workforce needs. Their guidance ensures CSTEM-T remains responsive, innovative, and impactful. The dedication of these council members has been invaluable in shaping the future of the college and its students.

Have you always loved science/math/engineering/technology, or did that interest grow over time? (Littlejohn)

Answer: It is hard for me to say definitively how I felt about science, math engineering and technology at an early age. However, I did seem to have a level of adeptness in math and science that was identified as early as elementary school. Honestly, I think that exposure to science, math, engineering, and technology is vital to increasing interest in those types of subjects over time. It is natural to be disinterested in subjects that are unfamiliar or avoided. Unfamiliarity can produce an environment in which we

can begin to feel comfortable projecting negative images onto something or someone. Greater familiarity can allow for greater appreciation and love. This happens even within STEM subjects. Someone might be interested in STEM subjects in general, but only familiar with specific STEM disciplines such as Biology, Robotics, Computers, or Mechanical Engineering. Exposure to other science and engineering focuses can help to increase interest in STEM overall, while also creating a love for a specific STEM discipline that may not have been considered or even known previously.

What research or projects are you currently working on — and can students get involved? (Littlejohn)

Answer: There are two projects and both have student involvement. One project (of which I am working together with my fellow Industrial Engineering faculty member, Dr. Seeung Oh) is called the TRI-State Consortium for Resilient Automation and Cybersecurity System (TRACS). This project's goal is to provide opportunities for students to be a part of activities in the areas of: Robotics, AI, and Cybersecurity. These areas overlap with various STEMT disciplines such as Industrial Engineering, Mechatronics Engineering, Mechanical Engineering, and Cybersecurity. Students involved in this project have Summer Internship opportunities as well as Research Assistantship possibilities in the Fall and Spring semesters. TRACS is a partnership with two other universities.

The other project is called the Higher Education Workforce Development (HEWD) project. The goal of this project is to provide students with educational and research experiences that will prepare them to be able to work in technical areas at the DOE/NNSA/SRNS. In addition to these experiences, scholarship opportunities for students, scholarship opportunities through the project are available.

What skills do you think are most important for students to develop right now? (Littlejohn)

Answer: Of course, math skills are important. Beyond that is developing the ability to not rely on outsourcing basic skills that humans have by unnecessarily relying on technology. This is important. One relevant example is strengthening the ability to perform basic math comfortably without the need to use a calculator. Another relevant example is in the use of Artificial Intelligence (AI). Some recent studies have shown that overuse of AI tools (specifically for activities requiring critical thinking, memory, and creative writing) can lead to a decrease in a person's cognitive abilities. This process can be referred to as "Cognitive Offloading". In addition, students should work on increasing their own personal love for reading. Increased reading can help to strengthen critical thinking, reading comprehension, and other related skills. In order to maximize their potential, students should learn not to rely on one human source (whether it is Chat GPT, The New York Times, or a celebrity influencer) to interpret the world for them.

What did you want to be when you were a child? Are there any similarities between what you do now and that? (Littlejohn)

Answer: I wanted to be a physician when I was a child. The holistic approach of naturopathic physicians is appealing to me. I love naturopathic physicians and what they do. Initially there might not seem to be any connection between being a naturopathic physician and being an industrial and systems engineer. However, there are distinct similarities. For example, naturopathic physicians and industrial and systems engineers are both areas of applied mathematics and science. Both prioritize the study and understanding of systems by utilizing comprehensive approaches for problem solving. This is in contrast to other medical and engineering disciplines that are specialized towards the use of atomistic solution methods. Naturopathic physicians focus on the human body, its internal systems, the systems that interact with the human body and its systems, and the various internal and external interactions of all those systems. In a parallel way, industrial and systems engineering focuses on the world in general, systems within the world, the various subsystems of these systems, and all relevant interactions between those systems.

What internships or industry connections does CSTEM-T offer to help students get hands-on experience? (Biswal)

Answer: Our college has housed SC HBCU consortium on Employer Degree Apprenticeship Program – Registered with Department of Labor. This program has helped many of our students in providing internship and hiring after graduation.

What skills do you think are most important for students to develop right now? (Biswal)

Answer: Based on the current workforce trends, students should need to develop AI skills, communication skills, problem solving and critical thinking skills, and Teamwork.

What's one class project or experience that you think every student should have before graduating? (Biswal)

Answer: If I had to pick just one transformative experience every student should have before graduating, it would be integrating AI and cybersecurity into their projects. A local community-based problem-solving project is the most ideal.

If you could give one piece of life or career advice to CSTEM-T students, what would it be? (Biswal)

Answer: One piece of advice I'd shout for every CSTEM-T student is "Continuous Learning". Adapting continuous learning throughout life to stay updated with new knowledge, skills, and technologies. It is crucial for career advancement, cognitive health, new experiences and personal fulfillment.

What role do mentorship and representation play in your work with students at this HBCU? (Thomas)

Answer: Mentorship and representation are essential in my work with students at HBCUs because they provide academic, emotional, and professional support. I keep an open-door policy because I believe students should always feel they have someone to turn to—whether for guidance, reassurance, or simply a listening ear. As a mentor, I value giving students someone they can relate to, helping them navigate their journey with a sense of confidence and belonging. Seeing students from similar backgrounds succeed in their academic and professional pursuits helps challenge stereotypes and fuels their aspirations. By offering guidance and being a role model, I aim to empower my students to reach their full potential.

How do you help students see themselves as future engineers, scientists, or technologists? (Thomas)

Answer: I help students see themselves as future engineers, scientists, or technologists by first connecting their personal passions to potential career paths. I take the time to talk to them about what excites them and how those interests can guide them towards a fulfilling future in these fields. For students interested in science, I offer hands-on experience by inviting them to work in my research lab, where they can apply what they're learning in a real-world setting. I also help students access internship opportunities, giving them exposure to various roles within their chosen fields. By providing these experiences and showing them the relevance of their passions, I empower students to confidently pursue careers in engineering, science, or technology.

What collaborations or partnerships have enhanced your work at SCSU — either with industry, other universities, or government agencies? (Thomas)

Answer: At SCSU, collaborations with industry, universities, and government agencies have greatly enhanced my work. For example, my collaboration with scientists at MUSC has been invaluable, as they've mentored me and played a key role in helping me secure my NIH grant. I've also received valuable training from research experts at Claflin University, which has enriched my ability to guide students in their research pursuits. Additionally, I spent two summers conducting research and receiving training from scientists at the Navy Medical Research Unit Dayton through the DOD HBCU Faculty Research Program. These partnerships have not only advanced my own research but have also provided unique opportunities for students to gain hands-on experience, fostering a collaborative and growth-driven environment at SCSU.

How do you help students prepare for careers after graduation? (Thomas)

Answer: I help students prepare for careers after graduation by teaching a senior-level course specifically designed to support their transition into the workforce. In this course, we focus on developing resumes and CVs, creating personal statements, and honing speaking skills through presentations, which give students valuable experience discussing science in professional settings. We also host an Internship Night, where companies and universities are invited to share opportunities with our students, giving them direct access to potential employers and graduate programs. Additionally, I lead the annual STEM-T Showcase, where students present their research, and universities and companies set up recruitment tables. In past years, this event has led to students receiving job offers and invitations to join graduate programs, providing them with crucial networking and career-building

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