

Dr. Larry Ferguson, Acting KCTCS President

Cybersecurity Programming

KCTCS is higher education with a focus on HIRE education.



Centers for Academic Excellence in Your Own Backyard



Bluegrass Community and Technical College (BCTC) & Owensboro Community and Technical College (OCTC) are designated as **Centers for Academic Excellence** in Cyber Defense Education (CAE-CDE) by the National Security Agency (NSA) and the Department of Homeland Security (DHS) for their **Associate of Applied Science degrees in Computer & Information Technologies**.

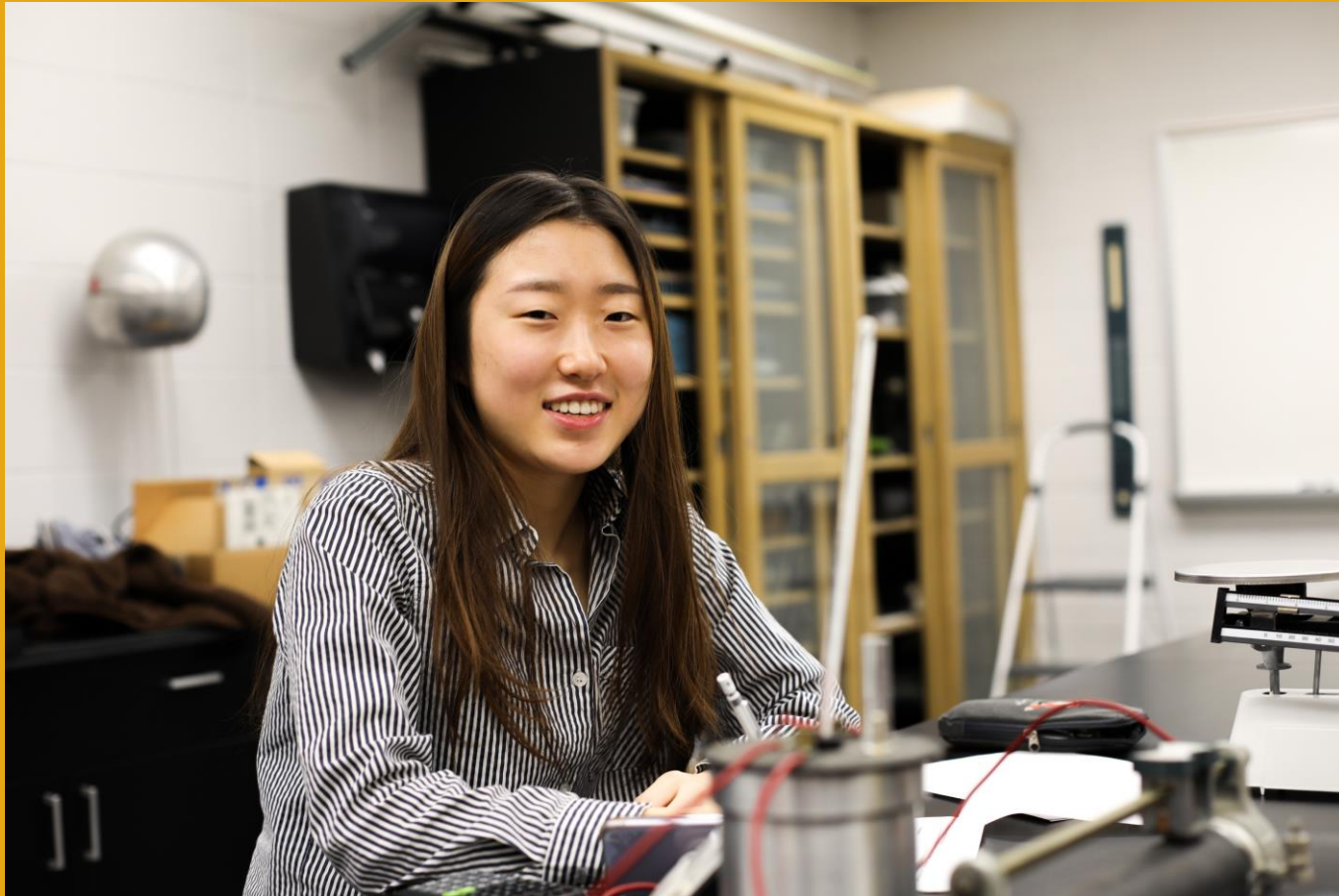
Less than 300 colleges in the United States have earned this designation, and only 83 are two-year institutions.

This AAS degree was written with the NSA/DHA Center for Academic Excellence in Cyber Defense competencies and has four(4) primary tracks:

- **Secure Coding**
- **Network Defense**
- **Cyber Forensics**
- **Cyber Science**

The degree has seven(7) embedded certificates.

Big Sandy Community and Technical College (BSCTC) also offers an Associates in Applied Science with a track in Network Defense.



Assessing the Community Need by Working with Regional Employers

In a Cybersecurity Needs Assessment conducted by BSCTC in August of 2020, several of the region's largest employers indicated a need for a workforce with the knowledge and skills to protect information and systems from being stolen, compromised, or attacked - cybersecurity professionals.

The group that participated in the assessment represents six of the top fifty major employers in the Big Sandy Region, with a combined workforce of more than 13,917 employees (31% of the region's civilian workforce). Several of the top employers include Highlands Appalachian Regional Hospital (ARH), Pikeville Medical Center, Big Sandy HealthCare, Floyd County Schools, Mountain Comprehensive Care, Odle Management Group, and Shaping Our Appalachian Region (SOAR). Many of these employers have pledged support and resources for Big Sandy offering this degree.

100% identified the need for cybersecurity professionals in the region

92% indicated that they would hire an individual with an AAS in Cybersecurity and Network Defense

67% of the employers indicated that they conduct regular cybersecurity hygiene training for all employees

41% indicated that their current IT workforce does not possess cybersecurity skills such as malware analysis, digital forensics, reverse engineering, threat actor identification, or ethical hacking.

Creating Nimble & Responsive Programs

The Cybersecurity faculty team has worked diligently to secure funding and guidance on creating and implementing a new AAS degree in Cybersecurity.

The first grant the team received is a Mentorlinks grant, which is supported by the AACCC (American Association of Community Colleges) and the National Science Foundation. The \$20,000.00 grant allowed the team to attend the National Science Foundation Advanced Technological Association Principal Investigator's conference in 2020.

The faculty team has also secured a National Science Foundation Advanced Technological Education grant in the amount of \$300,000.00 to help with the creation and implementation of the Cybersecurity program. The grant has helped pay for some of the costs associated with implementing a new program as well as providing funds for professional development.

The faculty have attended several conferences that have given vital information on the field of cybersecurity, which allowed them to make connections all over the United States. Two faculty members were invited to attend a meeting about the Role of Community Colleges in Cybersecurity Education: Future Directions 2022 Summit Washington, DC to discuss the future of cybersecurity.

Building Interest & Awareness

The BSCTC Cybersecurity faculty have secured and implemented grants for two summer camps to foster interest in cybersecurity. The first GenCyber camp was a teacher camp, which was held in June 2022, to foster relationships with multi-disciplined high school teachers and allow them to create and implement cybersecurity lessons in their respective classrooms. Lessons are geared to ignite interest in the program.

The second GenCyber camp was implemented in June 2023, for high school students in the college's service region. Twenty-two students participated in learning about the high demand for cybersecurity professionals, as well as programming Sphero Bolts, Raspberry Pi's and flying drones.

The next camp will be in June 2024, to inform middle school and high school teachers about the field of cybersecurity and to help them create exciting modules on cybersecurity to implement in their respective classrooms.



Employer-Driven Curriculum

The Cybersecurity program at BSCTC works together with a Business and Industry Leadership Team (BILT) from the area. The BILT effectively runs the program. BILT meetings are scheduled three times per year to review the competencies covered by the program and the depth in which each needs to be covered. The competencies are mapped to courses by faculty members to ensure the classes meet the needs of employers.

The BILT dedicates a meeting each year to discuss future trends in cybersecurity to ensure the program is looking to the future with curriculum updates and technologies required to effectively teach the program.



Expansion

Somerset Community College is in the process of applying to offer an AAS in Cybersecurity through their accrediting agency, which will include Network Defense and Cyber Forensics tracks. If approved, they will begin offering the AAS in Spring 2024.

SCC currently offer the following Cryptography Fundamentals (16 credit hours), Cyber Defense Fundamentals (22 credit hours), and Cyber Network and Forensics Fundamentals (16 credit hours). Each of these certificates can be completed in two to three semesters.

KCTCS Workforce Solutions

Last summer, the KY Chamber convened a significant number of companies to look at IT needs across the spectrum (not just related to cybersecurity). Ultimately, most companies said they will **not hire recent grads**, whether from a boot-camp, 2 year or 4 year. They are more interested in relevant experience as opposed to the credential (ideally candidates would have both). KCTCS brought forth the idea to create an **IT Talent Incubator**. In a nutshell, contractors with 1099 opportunities would offer paid work-based learning positions to upcoming and recent grads.

The contractors would also provide mentoring and skill development based on the competencies desired by the “top tier” IT corporations. Then, employers with full time positions would contract with these companies (brings in business for them) and also give guaranteed interviews to graduates, now bringing on entry level talent after 12-18 months as opposed to their standard 3-5 years.

Below is a report from the KY Chamber on the progress. Most of the cohort of employers (25+ companies) had existing relationships with KCTCS Colleges:

Our collaborative identified 34 positions, which were narrowed down to **5 critical positions needed in mid-high level skill areas, each requiring a minimum of 3 years of experience (NOC Analyst, Systems Admin, Lead Applications Engineers, Front End/Net Developers, and Cybersecurity Analysts)**. We are currently working on plans for a Virtual Hiring Event to promote these open positions. We are also working with several training options and hope to develop a plan that is feasible for our employers to implement for internal upskilling. We have worked with a couple of KCTCS partners in a small grant project with JFF to offer free Google training seats. We have currently placed 337 students and adults who are unemployed or underemployed, as well as a large number of incumbent workers who are training to enhance skills and seek promotions with their current employers. We have built a very robust talent pipeline with our participating trainers to supply entry-level positions. We are now focused on building internal and external training methods to upskill to mid and senior level positions. **We are planning to start working on pipelines and training for cybersecurity positions in the very near future.**