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Discovery

Degree Program at Clark State Community College Teaches Students About Cybersecurity

Knowledge in cybersecurity and related careers help to ensure the safety of computer systems, networks and other technology-based equipment



Clark State offers an associate degree program in cybersecurity/information assurance.

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November 10, 2011

"Cybersecurity" is a term heard more and more often, as computers and networks continue to expand and personal information is being increasingly stored in more computer systems connected to networks.

What is cybersecurity?

"Cybersecurity entails all activities that are necessary to ensure the confidentiality, integrity and availability of computer systems, networks and other technology-based equipment," said Dan J. Heighton, professor of computer networking and cybersecurity at Clark State Community College in Ohio.

Ensuring the security of this equipment and the information it handles is vital for personal, business and government activities.

"Disruption of this technology, equipment and the associated networks can have dire impacts on the health and safety of the people who depend on them," said Cathy Balas, executive director of Education at Avetec, Inc. "Imagine if we could not access our personal bank accounts, or physicians could not access our medical records, or the military could not



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Kristin Edwards discovered a new path with computers through Clark State and an Avetec internship.

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communicate with its satellites or electric companies could not access their power grids."

To further provide training in the field of cybersecurity, the National Science Foundation (NSF) worked with Clark State to develop an associate degree program in cybersecurity/information assurance based on materials, courses and curricula that were used at NSF-funded Advanced Technological Education (ATE) centers for cybersecurity education. ATE programs and centers focus on the education of technicians for the high-tech fields that drive the economy.

"The ultimate goal of this project is to develop employees who are well versed in the knowledge and skills needed to effectively and efficiently protect technology-based assets," said Heighton. "The main project goals were to develop a cybersecurity/information assurance degree, as well as provide unique internship opportunities for students and faculty in this degree program."

Students in the program learn skills such as basic knowledge of computer architecture, computer troubleshooting and repair, server administration, network infrastructure design and support and network infrastructure security. The curriculum incorporates a hands-on, experiential learning approach.

"This set of knowledge and skills allows students to focus their careers in a variety of areas," said Balas. "With this breadth of education, students have the opportunity to apply for entry-level and mid-level jobs in nearly all information technology support career fields. The need for people who are skilled in cybersecurity exists in nearly all business enterprises and government agencies."

The Clark State cybersecurity/information assurance degree program is now in its second year and there are thirty students currently identified as cybersecurity/information assurance majors. Due to the growing importance of cybersecurity, Clark State now requires computer networking students to take at least two cybersecurity courses to earn a networking degree. Many computer networking students indicated that they will double-major with a degree in cybersecurity/information assurance.

How students are recruited

Karen Rafinski, President of Clark State, explained that a large portion of students are former manufacturing workers who were laid off and came to Clark State to "re-tool for twenty-first century job opportunities." The local Workforce Investment Board also refers many unemployment recipients to Clark State.

Students also participate in the program through dual enrollment and other opportunities offered at high schools and career centers, and Clark State invites high school students to visit campus for a day to learn about IT careers, including cybersecurity.

According to Jane Cape, Dean of Business and Applied Technologies at Clark State, currently, "one primary focus of this effort is to interest high school girls in IT," and in the future, the Clark State team hopes to include outreach to high-school teachers, guidance counselors and faculty at other colleges and universities.

"The focus of this outreach process will be to develop an educational model that builds a seamless transition for high-school students to move to an associate-degree program and then on to a bachelors-degree program while focusing on a cybersecurity/information assurance career," said Cape.

Cybersecurity internship programs

Clark State also has a partnership with various companies as a means to bridge business with cybersecurity and computing.

Avetec, Lexis Nexis, SAIC, Computer Science Corporation, Lockheed Martin, Standard Register, Teradata, NCR and Wright-Patterson Air Force Base are working with Clark State to create cybersecurity internships for students.

"The main goal of our internship model is to connect student interns with high-tech businesses in an effort to develop the students' personal and professional skills and abilities," said Heighton. "The internship model is based upon a team structure that includes multiple interns and an information technology faculty mentor."

The internship offers student interns experiences such as designing and implementing secure network infrastructures, building secure high performance computing systems, performing system benchmarking and engaging with cybersecurity support and research personnel.

"Through this unique internship process the students are challenged to develop both technical and non-technical skills and abilities," said Ronda Black, an instructor of computer networking and cybersecurity at Clark State, and also a student internship mentor. "Additionally, the faculty mentors are actively engaged in the learning process and gain new insights and develop knowledge and skills as well."

Many internships have led to career opportunities for students, as well as further education in the field of cybersecurity.

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Investigators

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Related Institutions/Organizations

Clark State Community College

Locations

Ohio

Related Programs

[Advanced Technological Education](#)

Related Awards

[#0903228 Meeting 21st-Century Cybersecurity Needs Through Advanced Technological Education](#)

Total Grants

\$196,525

Related Websites

Clark State Community College Cybersecurity/Information Assurance Technology Web page: <http://www.clarkstate.edu/programdetails.php?Program=161>
Avetec, Inc., Education Web page: <http://www.avetec.org/education>
NSF's Advanced Technological Education (ATE) Program Web page: <http://www.nsf.gov/ate>

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