CALIFORNIA STATE UNIVERSITY, SAN BERNARDINO

CYBERSECURITY CENTER

Version 2

EXECUTIVE DIRECTOR

TONY COULSON

Tony Coulson, Ph.D., is the executive director of the Cybersecurity Center and professor of Information and Decision Sciences in the Jack H. Brown College at California State University, San Bernardino (CSUSB). During his tenure at CSUSB, Tony has led more than 20 grant-funded cybersecurity projects totaling over $18 million. Dr. Coulson also led the establishment of a nationally acclaimed cybersecurity program that spans business, computer science, national security studies, criminal justice, and public administration. The program is designated as a Center of Academic Excellence (CAE) in Cyber Defense Education by the National Security Agency (NSA) and Department of Homeland Security (DHS).

Dr. Coulson is a globally recognized cybersecurity expert and leads the CAE Community in Cybersecurity Community (caecommunity.org) as a CAE National Resource Center for over 200 colleges and universities. He has consulted on cybersecurity issues for Congress, federal agencies, and private organizations. He belongs to several boards and has won numerous academic, national, and community awards.

Prior to his academic career, Dr. Coulson had a successful industry career for over 17 years as an executive and an entrepreneur, starting his first successful technology business when he was 14 years old. He holds a Ph.D. in Management Information Systems from Claremont Graduate University.

DIRECTOR

VINCENT NESTLER

Vincent Nestler, Ph.D., is the director of the Cybersecurity Center and professor of Information and Decision Science in the Jack H. Brown College at CSUSB. He holds a doctoral degree in instructional design, a master's degree in network security from Capitol Technology University, and a Master of Advanced Technology from Columbia University. He is the author of the *Principles of Computer Security Lab Manual*. Dr. Nestler is a network engineering consultant and technical trainer with over 20 years of experience in network administration and security. He served as a Data Communications Maintenance Officer in the U.S. Marine Corps Reserve. During his service, he designed and implemented the training for Marines assigned to the Defense Information Systems Agency (DISA) Computer Emergency Response Team. He also served as the Assistant Operations Officer (training) for the Joint Broadcast System, during its transition to DISA.

Since 2007, Dr. Nestler has been integral to training CyberCorps® students at Idaho State University and at California State University, San Bernardino. He is the principal investigator for the NICE Challenge Project (nice-challenge.com) – serving over 350 schools nationwide. The NICE Challenge Project develops real-world, hands-on scenarios that provide students with cybersecurity workforce experience before joining the workforce. Currently he is an assistant professor at California State University, San Bernardino. Dr. Nestler has held numerous professional certifications, including Security+, Network+, A+, ACE, MPE, MCSE, MCT, RHCE, and others. He has over 25 years of experience teaching and has been instrumental in developing a wide range of curriculum, from grade school to secondary education, higher education, and graduate school.

NATIONAL LEADER IN CYBERSECURITY EDUCATION

"Ranked one of the top programs in the world for cybersecurity higher education"

–digitalguardian.com

As a leader in cybersecurity education, CSUSB's prestigious academic program earns national attention from both government and industry. CSUSB has been designated as a Center of Academic Excellence in Cyber Defense Education (CAE-CDE) by the NSA/DHS since 2015. CAE-CDE designated institutions have met the rigorous requirements set forth by the joint sponsors of the program, the National Security Agency (NSA) and the Department of Homeland Security (DHS).

In 2020, the Cybersecurity Center (CSC) at CSUSB was selected as the CAE in Cybersecurity Community National Center (CAE-C CNC). CSUSB provides numerous resources and services to the CAE in Cybersecurity Community and is responsible for leading collaboration among the designated institutions and providing administrative support to the program. The number of designated CAE schools has soared by more than 100% since 2014, and the number of cybersecurity professionals graduating into the workforce increases every year. More than 80% of participants in middle and high school outreach programs offered by the CSC have reported increased interest in cybersecurity education and careers, and 91% report increased interest in attending college.

Using our position as a national leader in cybersecurity education, our program at CSUSB has had a strong impact on the national shortage of cybersecurity professionals in the U.S. workforce. By addressing every aspect of the cyber education pipeline from K-12 to the workforce, we have placed ourselves in a leadership position to effect significant change by expanding the national cybersecurity workforce.

"Students from... the Inland Empire will be on the front lines of the cyberwarfare that's defining our modern defense capabilities."

–Pete Aguilar, U.S. Representative, California's 31st Congressional District

CYBERCORPS® SCHOLARSHIP FOR SERVICE

Serving as a national model, CyberCorps® is CSUSB's scholarship program focused on increasing the number of cyber professionals in government employment. Students participate in professional development, competitions, certifications, service outreach, and projects.

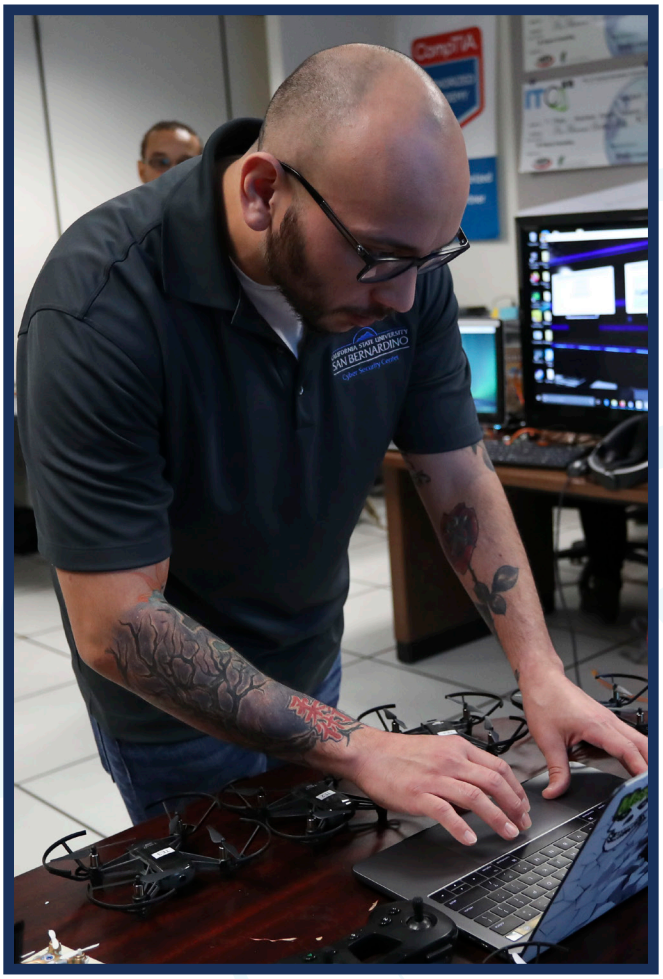
A FEW NUMBERS TO LOOK AT...

$700,000	given annually to scholarship recipients
100%	go into government employment
$50K - $80K	awarded to each student
2 YEARS	full tuition, books, and stipend
2 YEARS	federal employment upon graduation

FUNDED BY THE NATIONAL SCIENCE FOUNDATION

CyberCorps®
Defending America's Cyberspace

NSF



From 2009 to 2018, the college has given **OVER $7 MILLION** in scholarships through the National Science Foundation grant CyberCorps®: Scholarship for Service.

"My current work role is... trying to communicate cybersecurity to people that might not understand it, which the program at CSUSB really prepares you for - I'll call it cyber-translating."

–Program Alum

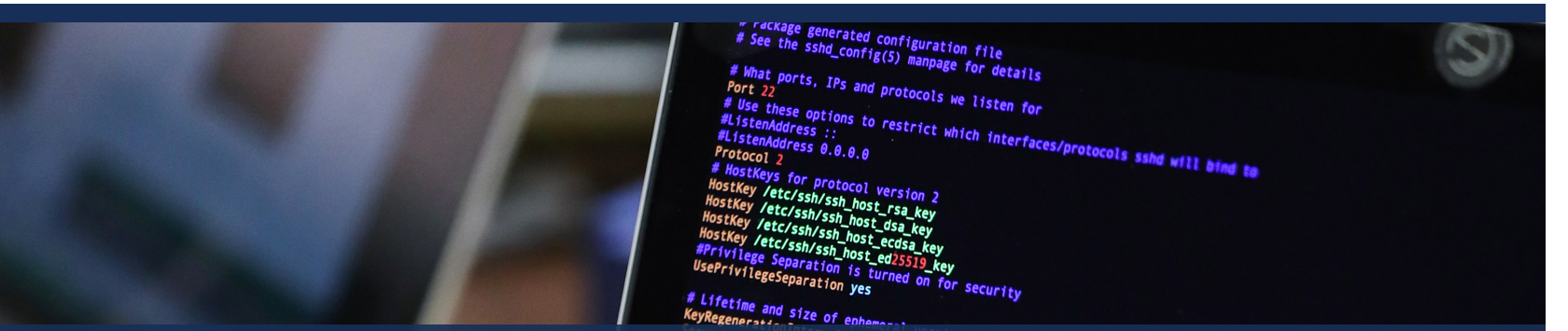
46% of scholarship recipients come from underrepresented populations

37% of CyberCorps® scholarship recipients at CSUSB are women

108 total scholarship recipients at CSUSB since 2009

DATA FROM 2016-2019

NICE CHALLENGE PROJECT



"The students, and myself, were delighted at the humor and realism in the first challenge we tackled. It was a challenge... rooted in the real world rather than the step-by-step guided labs they had seen before."

–Eric Waterkotte, Peninsula College

Designed for **INDUSTRY**, **GOVERNMENT**, and **EDUCATION**, hosted at CSUSB, the NICE Challenge Project has over **450** registered educational institutions. It develops real-world cybersecurity challenges within virtualized business environments that bring students workforce experience before the workforce. Its goal is to bring the most realistic experiences to students, at scale year round, while also generating useful assessment data about their knowledge, skills, and abilities for educators.

Revolutionizing Cyber Learning and Assessments

Cyber challenge labs emphasize problem-solving, self-learning, and documentation over following step-by-step instruction and limited simulations.

The NICE Challenge Project is a grant project managed and staffed by the 501(c)(3) non-profit University Enterprises Corporation (UEC) in partnership with California State University, San Bernardino.

The NICE Challenge Project is only possible through its three-pillar approach to developing and delivering challenges. Together these pillars create a tight, vertically integrated, technical solution that is imperative to delivering real-world challenges at scale to students across the United States.

Platform | Environment | Challenges

Platform - A powerful cross-platform web application where users can deploy challenges, access VMs, manage accounts, and review challenge results, all without any installers or downloads.

Environment - Full-scale, context-rich business environments tailored around NICE Framework categories. Each environment includes a fully staffed fictional business organization in addition to its desktops, servers, and networks.

Challenges - Competency-based assessments focused on real-world problems and context, designed to capture useful data for actionable metrics. Each challenge is mapped to the NICE Framework Tasks, Work Roles, KSAs (Knowledge, Skills, and Abilities), and CAE KUs (Knowledge Units).

OUTREACH

Outreach and recruitment for the Cybersecurity Center continues to grow. CSUSB students involved in the **Cyber Intelligence and Security Organization (CISO)** and local **Women in Cybersecurity (WiCyS)** chapter demonstrate their latest technology projects while promoting ethical computer practices, cyber hygiene, and internet safety. CISO members engage in more than 20 annual volunteer cyber-related and career-guiding activities throughout the community, from elementary schools to college, local business professionals, Girl Scouts, continuing care facilities and retirement homes.

Our students strengthen their public speaking and presentation skills by leading events that display our cutting-edge projects including drone research and engineering, vehicle security and car hacking, containers and DevOps, an R.C. cloud-based rover, forensics, surveillance, IoT (Internet of Things), Collegiate Cyber Defense Competition (CCDC), Gadgeteer, emergency communications (HAM), open-source intelligence, ethical hacking, and more. We've opened our doors to the public, hosting campus tours for schools of all levels to visit and explore our information security lab, discuss cyber topics, and hear testimony and guidance from our passionate student leaders.

The immeasurable impact that CISO has made on the community is observed through the rapidly growing interest in information technology, an increase in cybersecurity graduates, and the growing attention from government agencies, politicians, and talent-seeking tech industry leaders like Google, Facebook, Booz Allen Hamilton, Northrop Grumman, MITRE, and our National Laboratories.

SINCE 2015...

50,000+ individuals served (K-12 & local community)

12,529 volunteer hours served

916 participating student volunteers

DATA FROM 2015-2020

https://ciso-csusb.org/

GENCYBER

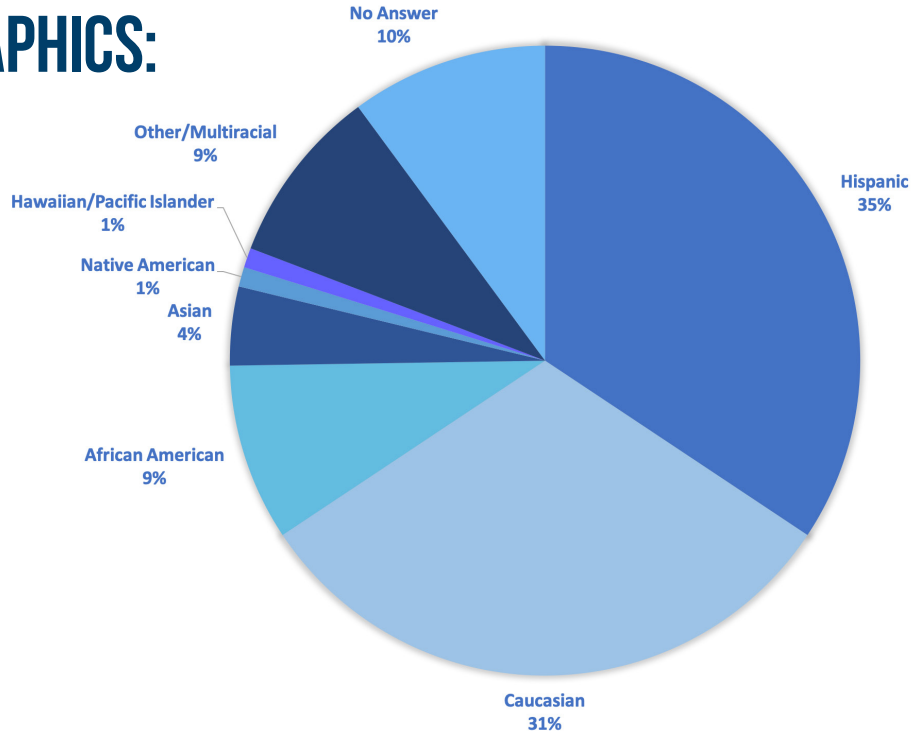
GenCyber is a free, one-week, immersive summer camp for middle and high school girls, funded by a grant from the National Security Agency and has been sponsored by the National Science Foundation, Facebook, Girl Scouts of San Gorgonio Council, Silicon Valley Community Foundation, Google, IBM, USBank, Cyber SB Center of Learning, ConvergeOne, Bank of America, CISCO, Northrop Grumman, San Manuel Indian Bingo & Casino, Staples, and the U.S. Department of Homeland Security. The students participate in drone security, forensics, cyber hygiene, CyberPatriot, basic programming, team-building, white hat hacking, and more. Between 2015-2019, **1,287** girls from the local community have participated at CSUSB's GenCyber Camp.

"My daughter is really interested in pursuing a career in cyber hacking prevention. GenCyber has created a spark in her spirit. This program has given her a huge amount of confidence."

–GenCyber Parent

GenCyber is a grant project managed and staffed by the 501(c)(3) non-profit University Enterprises Corporation (UEC) in partnership with California State University, San Bernardino.

DEMOGRAPHICS:



The Girl Scouts of San Gorgonio Council and the Cybersecurity Center partner together to host this free annual camp. Each year, **250** girls from San Bernardino and Riverside counties learn about career and academic opportunities offered at CSUSB.

$230,000
total cost of one-week camp

81%
increased interest in cyber-related fields

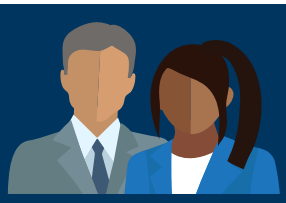
91%
increased interest in attending college

DATA FROM 2016-2019

CAE IN CYBERSECURITY COMMUNITY

The National Centers of Academic Excellence (CAE) in Cybersecurity program, run by the NSA and DHS, designates schools that meet rigorous CAE curriculum and staffing requirements. CSUSB received its CAE designation in 2008, becoming one of three CAE National Resource Centers (CNRC) in the nation in 2016. In 2020, the Cybersecurity Center (CSC) at CSUSB was selected as the CAE in Cybersecurity Community National Center (CAE-C CNC).

The CAE in Cybersecurity Community provides for the fruitful exchange of relevant information, ideas, and events by CAE institutions for CAE institutions through weekly newsletters, web conferencing platforms, and by hosting the annual symposium for existing CAEs and applicants.



CAE in Cybersecurity Virtual Career Fair Sponsored by NCyTE and NSF

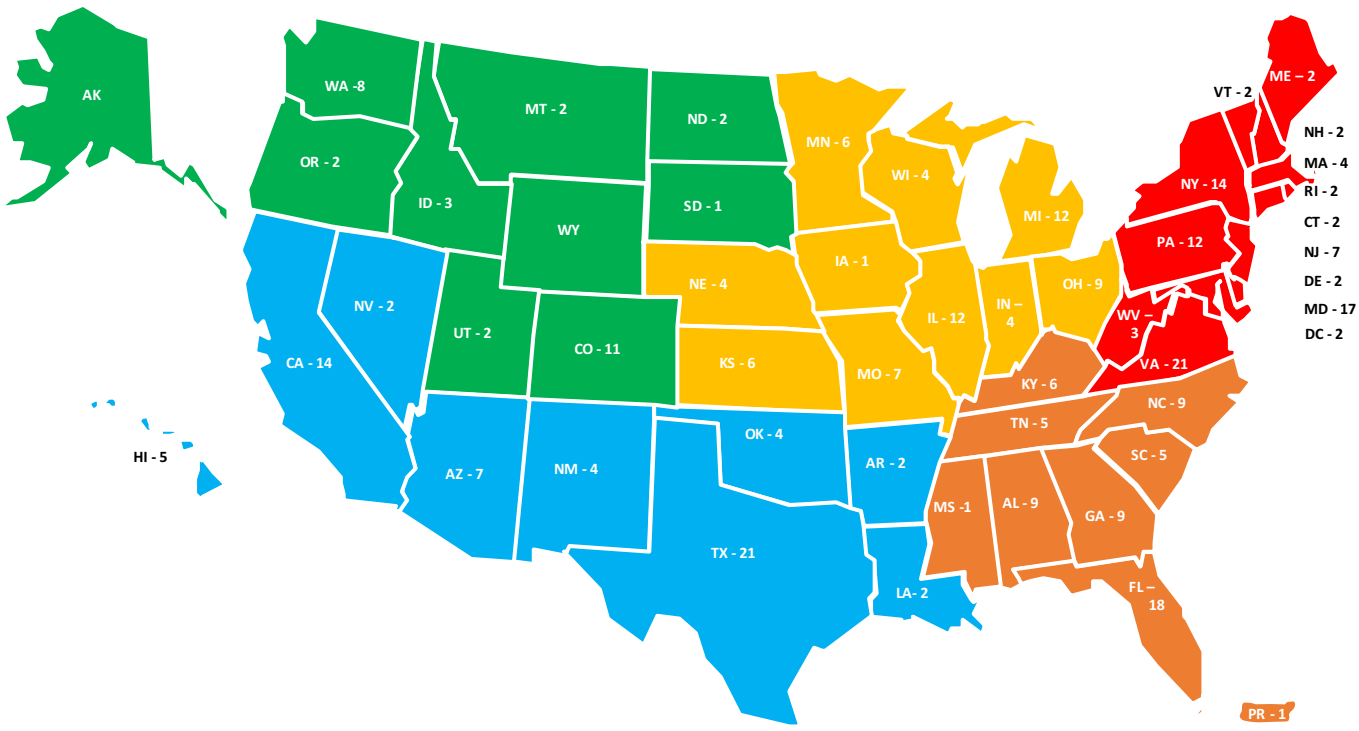
Since 2017, the CAE in Cybersecurity has hosted an annual national Cybersecurity Virtual Career Fair for students of CAE-designated institutions. Students, alumni, and faculty from CAE-designated institutions across the nation are allowed to participate in the career fair at no cost. Since 2017, over 2,500 students and over 50 employers have participated in the virtual career fair.

CAE in Cybersecurity Symposium

The CAE Symposium is designed to provide CAE Community members and applicants the opportunity to network, receive community updates, and present their research to the community. The symposium is open to all existing CAE-CDE, CAE-R, and CAE-CO institutions and applicants.

CAE IN CYBERSECURITY COMMUNITY

For more information, please visit caecommunity.org



331 CAE-designated institutions in 2020

CAE-C Regional Hubs

Northeast Region (FEMA Regions I, II, & III): Maine, Vermont, New Hampshire, Massachusetts, Connecticut, Rhode Island, New York, Pennsylvania, New Jersey, District of Columbia, Delaware, Maryland, Virginia, West Virginia

Southeast Region (FEMA Region IV): Kentucky, Tennessee, North Carolina, South Carolina, Mississippi, Alabama, Georgia, Florida, Puerto Rico, Virgin Islands

Midwest Region (FEMA Regions V & VII): Nebraska, Kansas, Minnesota, Iowa, Missouri, Wisconsin, Illinois, Indiana, Michigan, Ohio

Northwest Region (FEMA Regions VIII & X): Washington, Oregon, Idaho, Montana, Wyoming, Utah, Colorado, North Dakota, South Dakota, Alaska

Southwest Region (FEMA Regions VI & IX): California, Nevada, Arizona, New Mexico, Texas, Oklahoma, Arkansas, Louisiana, Hawaii

The CAE in Cybersecurity Community is a grant project managed and staffed by the 501(c)(3) non-profit University Enterprises Corporation (UEC) in partnership with California State University, San Bernardino.

INNOVATIVE STUDENT FACULTY RESEARCH

VEHICLE SECURITY RESEARCH

In 2020, CSUSB became the administrator of the Information Security Research and Education (INSuRE) program, which originated at Purdue University in Indiana. INSuRE is a collaborative network of Centers of Academic Excellence institutions focused on introducing students to research opportunities on a national scale. Participating students work to solve real-world cybersecurity issues with the assistance of technical directors from industry and government. CSUSB students have been working with Argonne National Laboratory since 2018, completing three separate research projects centered around vehicle security and policy.

Since becoming involved with the project, CSUSB has sent multiple students to internships with Argonne National Laboratory. Initially, students researched policy gaps in vehicle security, but the project has evolved to include elements such as learning CANBUS protocols, stripping all electrical components from a vehicle, and creating as a test bench. Students enrolled in the project are able to apply for the INSuRE summer internship program, which places students from projects into internships, typically with the agency or laboratory directing the project. Many disciplines are represented in the project, including information systems and technology, computer science and engineering, mathematics, criminal justice, public administration, and political science.

In 2017, CSUSB helped the INSuRE program to develop a curriculum database called the INSuRE Hub. This hub provides project management services and tracks deliverables for all participating institutions. Student research teams can access work from previous semesters and expand on it in their own projects.

Congressman Mark Takano takes a VR tour at the CSUSB Cyber Lab Winter 2020

VIRTUAL REALITY SECURITY OPERATIONS CENTER

The Virtual Reality Security Operations Center (VR SOC) project is a virtual creation of an operations center, using VR headset technology to allow users to view data and interact with systems and each other. The project's popularity and application has boosted student club involvement and proved invaluable for education, outreach and starting careers. The innovation of the project prompted the US Army Command to visit the student lab for an in-person, hands-on overview. Student participants have secured federal cybersecurity positions based on the interest in this project.

Booz Allen Hamilton shares in the interest and future of the VR SOC project

COMMUNITY COLLEGE CYBER PILOT PROGRAM (C3P)

CSUSB helps spearhead NSF's new pilot project that addresses the cybersecurity workforce shortage by extending their renowned scholarship program to community colleges across the nation.

Working closely with Whatcom Community College in Bellingham, Washington, CSUSB leverages its sustained, historical success of SFS program management to develop and administer the pilot project that reclassifies military veterans and bachelor's degree holding students into fields of cybersecurity.

$4.3 MILLION was provided by the NSF to support the success of the experimental program at participating colleges for three years (2019-2020). The C3P program employs the rapidly growing social networking platform Portfolium, where Scholars develop educational portfolios that showcase their academic work, projects, and achievements to potential employers. Capstone experiences and competition preparation is also highlighted via Scholars testing their knowledge, skills, and abilities (KSAs) on the National Initiative for Cybersecurity Education (NICE) Workforce Framework.

C3P Scholars take part in an apprenticeship-like, cohort-based program where they develop proficiency in information security, computer science, intelligence, criminal justice, and similar cybersecurity disciplines. In addition to receiving professional development mentorship that prepares them for the federal workforce, Scholars participate in a series of boot camps, cyber research projects and a variety of ventures that expose them to hands-on application of their KSA development.

The CSUSB Cybersecurity Center's support to the C3P program helps secure America's cyber stability and economic prosperity through the development of an innovative and efficient education system, producing an elite 21st-century cybersecurity workforce as well as a cyber-informed citizenry.

"We know that community colleges play an important role in providing essential academic and training opportunities to a wide range of individuals. The awards made through the C3P program will provide scholarships and create professional pathways for both veterans of the Armed Forces and for bachelor's degree holders who want to pursue careers in cybersecurity."

–Karen Marrongelle, NSF assistant director for Education and Human Resources

The Community College Cyber Pilot program is a grant project managed and staffed by the 501(c)(3) non-profit University Enterprises Corporation (UEC) in partnership with California State University, San Bernardino.

AVAILABLE DEGREES

M.S. Information Systems Technology, Cybersecurity Option
M.A. Computer Science (optional Cybersecurity Certificate)
M.B.A. Cyber Security Concentration
M.P.A. Cybersecurity Concentration
M.S. National Cybersecurity Studies

B.S. Information Systems and Technology, Cybersecurity Option
B.S. Information Systems and Technology, National Security Option
B.A. Criminal Justice, Cybersecurity Option
B.S. Computer Science (optional Cybersecurity Certificate)

SECURE YOUR CAREER TODAY

Jack H. Brown College of Business and Public Administration
California State University, San Bernardino
5500 University Pkwy, San Bernardino, CA 92407
(909) 537-7535
cyber@csusb.edu

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