

CELEBRATING 20 YEARS WITH THE
CENTERS OF ACADEMIC EXCELLENCE
IN CYBER DEFENSE

2019

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#### Introduction

On behalf of the National Security Agency and the Department of Homeland Security, congratulations on 20 years of collaborating and protecting our nation. You are educating our nation's **cyber first responders**, an essential role in a world that relies so heavily, if not almost exclusively, on cyber technology.

NSA launched the Centers of Academic Excellence in Information Assurance (now Cyber Defense) Education program in 1999, with the intent to contribute to the growing demand for cybersecurity expertise in the intelligence community workforce. In the past twenty years, the CAE-CD program has grown from seven institutions originally designated, to 312 designated institutions today! As the program has grown, the academic community has responded to our partnership with energy, enthusiasm, creativity and innovation, and has grown the community at an unprecedented rate.

From the beginning, the CAE designation has been based on both curriculum and program criteria. The criteria speaks to the institutions' commitment to joining the CAE-CD program, practicing what they teach, maintaining quality faculty to ensure a lasting academic program, outreach to high schools and others in need of cyber defense expertise, and commitment to developing the profession.

Today, the CAE-CD program is focusing on several initiatives critical to the success of cyber workforce development. On the forefront, though, is addressing the need for qualified, skilled educators, who are the keys that unlock the door to a skilled cyber workforce. There is a recognized shortage of qualified educators; as the population of students continuing in cybersecurity to the doctoral or post-doctoral levels is shrinking, thereby limiting the number of those who can and will serve in the academic environment to teach. Schools consistently have multiple cybersecurity faculty positions open for long periods, and that is a critical limiting factor.

In the near term, the goal is to compensate for the negative impact this issue has on growth. In the long term, it will guide our future and must be solved and integrated into funding and standard practice to successfully protect the well-being of the nation.

Your continued commitment to answering this crisis, and willingness to invest time and expertise to define objectives, craft solutions, and support the program office in making this the best cybersecurity academic program it can be is appreciated and inspiring!

Ms. Diane M. Janosek

Commandant, National Cryptologic School National Security Agency

#### **CAE Goal**

The goal of the NSA/DHS National Centers of Academic Excellence in Cyber Defense (CAE-CD) program is to:

- Reduce vulnerability in our national information infrastructure by promoting higher education and research in Cyber Defense (CD)
- Produce a growing number of professionals with expertise in CD disciplines
- Proactively increase our understanding of robust CD technology, policy, and practices that will enable our Nation to effectively prevent and respond to a catastrophic cyber event
- Contribute significantly to the advancement of state-of-the-art CD knowledge and practice

### **History of the Program**

NSA launched the National Centers of Academic Excellence in Information Assurance (IA) Education program in 1999. The program was envisioned to contribute to the growing demand for cybersecurity expertise in the intelligence community workforce. Over the years, as it became clear cyber defense would become an integral element of national security, the program's objectives expanded to support the nation's need for cybersecurity workforce development.

The program originally called for schools to map their information assurance curriculum to Committee on National Security Systems (CNSS) standards. The first created was CNSS 4011, which outlined the minimum knowledge required of IA professionals to execute their craft and served as the foundation for the CAE in IA Education Program. As the CNSS developed subsequent standards (CNSSIs 4012-6), institutions were given the opportunity to map to them. Once successfully mapped, institutions received a certificate through the Information Assurance Curriculum Evaluation (IACE) program. Receiving IACE endorsement was the first step to CAE designation. The program began the transition from using CNSS standards to developing and implementing a new Knowledge Unit (KU) structure that more accurately reflected the state of cybersecurity

and technology in 2012. Applicants began using the new KUs for designations in 2014 and by 2017, every academic institution in the program had made the transition.

From the beginning, the CAE designation was based on both curriculum and program criteria. The criteria speak to the institution's commitment to joining the CAE-CD program, practicing what they teach, maintaining quality faculty to ensure a lasting academic program, outreach to high schools and others in need of IA expertise, and commitment to developing the profession. Once an institution received their IACE endorsement, they continued in the second stage to document the program criteria. When the program evolved to using KUs, the two-stage process merged into one application.



The first seven institutions to receive the designatreceiving James Madison University, George Mason University, Idaho State University, Iowa State University, Purdue University, University of California, Davis, and University of Idaho. These seven schools were instrumental in developing information assurance curriculum in its infancy. Textbooks had yet to be written on the topic, so these first seven schools formed a bond and shared resources to begin building a community that has grown to 312 schools across the country.

Over the years, the CAE Program Management Office has undergone many enhancements in order to keep up with the cyber landscape. Some of the more notable changes include the introduction of the DoD Information Assurance Scholarship Program (2001), the addition of DHS as a partner (2004), the addition of the Research designation (2008), and the Two-Year Education (2010) designation. In the 2017 National Defense Authorization Act (NDAA), Congress changed Information Assurance to Cyber Defense, thus changing the program name to CAEs in Cyber Defense.

In collaboration with the CAE Community, the CAE-CD Program Office changed the process for curriculum mapping and titles of the designation in 2018. The Program Office and the designated schools met in a series of workshops to address an update of the program's Knowledge Unit (KU) structure and content, and in the process, reached consensus on changing the academic requirements for designation. This update was driven by the need to distinguish between Bachelors and graduate degrees, as well as the relationship of types and numbers of KUs at each level of recognition.

Without substantive change to the KUs themselves, the curriculum mapping requirements evolved. The new process gave all designating institutions the opportunity to individualize their programs and reflect their programs' expertise within their designation. This also makes it easier for students, employers, and educators to identify the focus of each designated program and how those programs map to the National Initiative for Cybersecurity Education (NICE) Workforce Framework categories and work roles. The program office implemented this new paradigm in the 2019

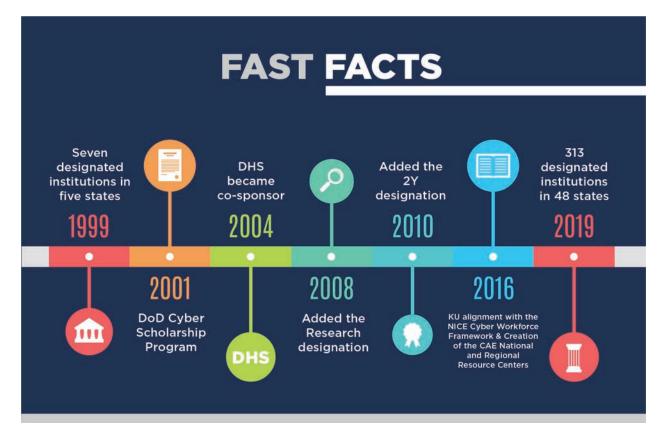


application cycle (October 2018 to May 2019). Until the automated tool used for applications is updated, the list of institutions on the CAE-CD web page will continue to list the original CAE-CDE, CAE-2Y, and CAE-R designations.

As of November 1, 2019, there are 312 designated institutions across 48 states, the District of Columbia, and Puerto Rico. There are 108 Community Colleges offering Associate programs and degrees. Many of our designees hold multiple designations; 47 hold both CAE-CDE and CAE-R designations, six hold both CAE-CDE and CAE in Cyber Operations (CAE-CO), two hold CAE-R and CAE-CO, and ten hold all three designations: CAE-CDE, CAE-R, and CAE-CO. Though the program has evolved through the years, our focus has always been and will continue to be, to promote higher education and research in cyber defense and produce professionals with cyber defense expertise in order expand to the cybersecurity workforce and to reduce vulnerabilities in our national infrastructure.







# NSA/DHS National Centers of Academic Excellence in Cyber Defense Today

#### **CAE-CD Designations**

#### CAE in Cyber Defense Research (CAE-R)

All CAE in Cyber Defense Research (CAE-R) applicants must be either a DoD school, a PhD producing military academy, or a regionally accredited, degree-granting four-year institution. They must be rated as either a Doctoral University – Highest Research Activity (R1), a Doctoral University – Higher Research Activity (R2), or a Doctoral University – Moderate Research Activity (R3) as determined by the Carnegie Foundation Basic Classification system (and/or other independent body to measure CD) or provide a written justification outlining their significant CD research.

The CAE-R criteria includes the demonstration of CD Research initiatives (faculty and student), publications, graduate-level production, and research funding.

#### CAE in Cyber Defense Education (CAE-CDE)

There are four levels of the CAE-CDE designation: Associate, Bachelor, Master, and Doctoral.

All CAE-CD designations have a maturity requirement. Curriculum used to map to KUs must have been taught at the institution for at least three academic years, and the designating program must have a least one graduating class of students completing the program.

All CAE-CD designations require applicants to map curriculum to three Foundational core KUs and either five non-technical or five technical KUs.

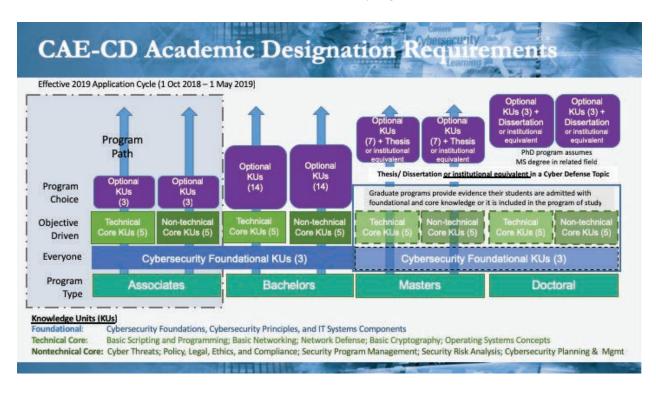
- Foundational KUs: Cybersecurity Foundations, Cybersecurity Principles, and IT Systems Components
- Non-technical Core KUs: Cyber Threats; Policy, Legal, Ethics, and Compliance; Security Program Management; Security Risk Analysis; Cybersecurity Planning & Management
- Technical Core KUs: Basic Scripting and Programming; Basic Networking; Network Defense; Basic Cryptography; Operating Systems Concepts

All CAE-CDE Associate applicants must be a regionally accredited, two-year community college or technical school, or a U.S. government cybersecurity training center, or a state or federally endorsed cybersecurity training center. Criteria for the CAE-CDE Associate designation includes:

- Demonstration of program outreach and collaboration, student development, CD Center establishment and maintenance, CD multidisciplinary efforts, practice of CD at the institution level, CD faculty, and student curriculum path and recognition.
- Successful mapping of the institution's curriculum to the Foundational KUs, Technical or Non-Technical Core, and three optional Knowledge Units (KUs).

All CAE-CDE Bachelor or Graduate applicants must be a regionally accredited, four-year college or graduate-level University, or a DoD school. The CAE-CDE criteria includes:

- Demonstration of program outreach and collaboration, student development, CD Center establishment and maintenance, CD multidisciplinary efforts, practice of CD at the institution level, CD faculty, and student curriculum path and recognition.
- Successful mapping of the institution's curriculum to the Foundational KUs, Technical or Non-Technical Core, and three optional Knowledge Units (KUs).
  - o Bachelor programs map to 14 optional KUs
  - o Graduate programs provide evidence their students are admitted with foundational and core knowledge, or that foundational and core knowledge is included in the program of study, and:
    - > seven optional KUs plus thesis or institutional equivalent in a CD topic for Master's programs, or
    - > three optional KUs plus dissertation or institutional equivalent in a CD topic (assuming the Master's is in a related field) for a PhD program



The National CyberWatch Center's KU Mapping Guide and the CAE KU Mapping Matrix are available to assist in gathering the course information needed to map to the CAE KU topics and outcomes. This consolidated mapping information will expedite entering course information in the CAE application website.

#### **Expectations of Designated Institutions**

Designated institutions are expected to actively participate in the CAE Community and support the CAE-CD program. Submission of an application acknowledges the following minimum participation expectations once a school is designated:

- Submission of an Annual Report with all required information
- Attendance at the annual CAE Community Symposium
- Regular communication with the CAE Program Office, the CAE Community, and the appropriate CAE Regional Resource Center (responds to email, offers input and suggestions for workshops, programs, program decisions, etc.)
- Maintenance of institution information on www.iad.gov/NIETP

#### **CAE-CD Candidate Program**

As awareness of the crisis in cybersecurity workforce began to grow, so did interest in the CAE-CD program. In the early years of the program, academic institutions were on their own to interpret designation requirements and successfully apply for designation. While the program office could answer specific questions, there was no concerted means that allowed interested institutions to get help in developing their programs or interpreting the application process. As a result, success in first time applications was about 57%.

In 2015, the National Science Foundation awarded the Catalyzing Computing and Cybersecurity in Community Colleges (C5) grant. As a co-PI on this grant, Whatcom Community College, Bellingham, WA, implemented a mentoring program to help community colleges pursue CAE-2Y. In an effort to use CAE Program Office resources most effectively, maintain fiscal responsibility, and encourage the growth of exceptional cybersecurity education programs, the CAE-CD program introduced the CAE-CD Candidate Program in 2016 and expanded assistance to all schools seeking the Cyber Defense Education designation. The mentoring opportunities offered in the Candidates Program are based on the C5 model and lessons learned.

The CAE-CD Candidate Program ensures applicant institutions have adequate opportunity for program development and application assistance prior to submitting an application. It is designed to reduce the time required to earn the designation, help new participants understand the depth and breadth of the program and designation requirements, and facilitate the sharing of experience and resources between institutions already designated and aspirants via mentorship opportunities. Depending on the maturity of the program, institutions are placed in either Program Development or Application Assistance.

Program Development is recommended for institutions needing further development of programs and/or curriculum, or for those with programs that have not reached maturity. Assistance and advice within this path are provided primarily by regional CAE Resource Centers. Candidate institutions have access to workshops and seminars, and are invited to programs and events hosted by the CAE Community.

Institutions assessed to be within one year of meeting curriculum and programmatic criteria are referred to the Application Assistance path for mentorship. Application Assistance is designed to

help new applicants interpret and document the depth of program and designation requirements and is the element of the Candidate Program modeled after C5.

Following implementation of the Candidate Program, the applicant success rate rose to 87% in the first year.

### CAE National Resource Centers (CNRCs) and CAE Regional Resource Centers (CRRCs)

The program office established the CAE National Resource Centers (CNRC) and CAE Regional Resource Centers (CRRC) in 2017 to provide an infrastructure among CAE-designated schools in different geographic regions. This support infrastructure is crucial to continued growth and efficacy of the CAE-CD program. Its success is a testament to the power of collaboration and cooperation, development of an academic community, shared resources, and shared goals.

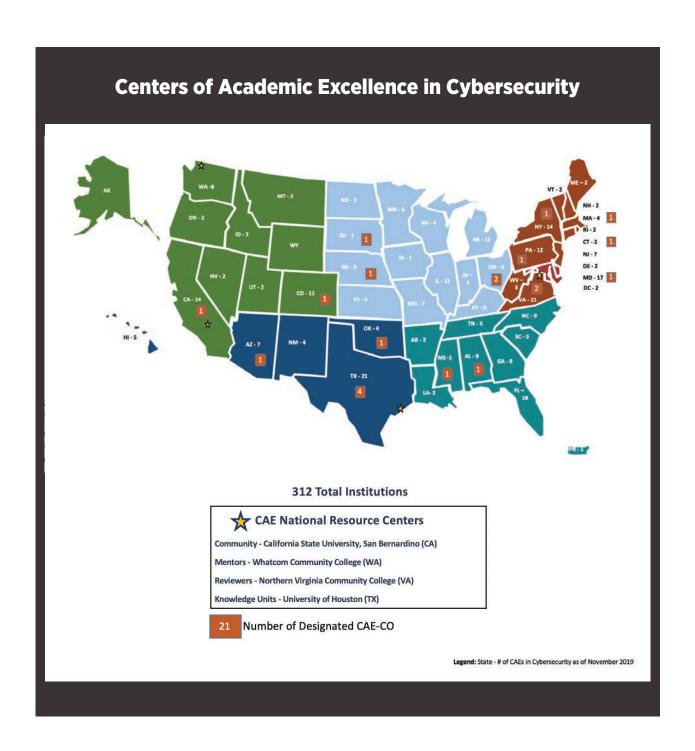
The CRRCs act as hubs for both institutions with designated programs and candidate institutions in a particular geographic region. They host a variety of program and faculty professional development workshops, seminars and courses, and facilitate collaboration in the region. They have the lead for assessing a new candidate's application readiness, helping candidate's identify shortfalls and plan their individual program development, and coordinate appropriate advisors and resources.

CRRCs may be a community college, a four-year college, or a university. No matter the type of school, they are responsible for management of the community and support to all designated institutions and candidates in their region. They have established a network of partners at all levels of designation to ensure every candidate has access to the particular assistance needed.

The CNRCs provide specialty assistance and leadership to the CAE Community in the areas of resource management, standards development and management, mentoring and peer review. The program office depends on the CNRCs to provide feedback and input for strategic planning, standards currency, and review of applications. This structure ensures separation of advice and mentorship from evaluation and designation.

Currently, there are four CNRCs and nine CRRCs. The following pages provide additional details about each of the CNRC and CRRC institutions.

# CAE National Resource Centers (CNRCs) and CAE Regional Resource Centers (CRRCs)





### SAN BERNARDINO



#### California State University, San Bernardino (CSUSB)

received its designation as a National Center of Academic Excellence (CAE) in Cybersecurity by the NSA and the DHS in 2008, and in 2016 became one of four **CAE National Resource Centers (CNRC)**. As a CNRC, CSUSB is responsible for the maintenance of the CAE in Cybersecurity Community. 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 an annual symposium for existing CAEs and applicants.

As the CAE in Cybersecurity Community has evolved and grown, we have worked to include and support a variety of institutions to move towards a common goal; accelerating and improving workforce

development through academia, government, and industry. To achieve this goal, we actively work with members from CAE designated institutions, government, and industry to provide the community with resources that will help aid in our individual and collective success. These resources include an information portal (caecommunity.org), webinars, workshops, logistical support, event management, knowledge management, training, marketing, and CNRC/CRRC support and sponsorship. We also host the annual CAE Virtual Career Fair, sponsored by CyberWatch West and the National Science Foundation for students, alumni, and faculty of CAE designated institutions seeking careers in cybersecurity. Since 2017, 47 employers and 1,835 job seekers from CAE designated institutions all over the nation participated in the Virtual Career Fair.

#### **DESIGNATIONS**

• CAE - Cyber Defense Education

#### **CONTACT INFORMATION**

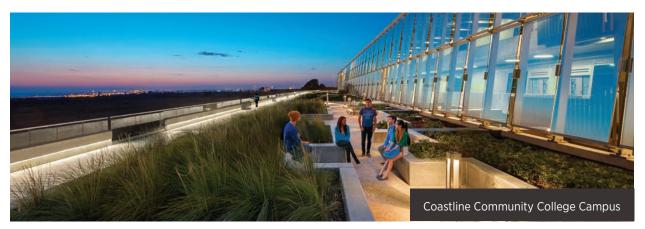
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cyber.csusb.edu





# COASTLINE COMMUNITY COLLEGE



Coastline Community College is proud to serve the CAE community as the CAE Regional Resource Center (CRRC) for the Southwest Region focusing on collaboration between institutions, assistance with re-designation applications, cybersecurity program development, CAE application activities, and professional development opportunities.

Coastline provides regional support to 32 CAE-CD, CAE-R, and CAE-2Y (as of 2018) institutions across the region including the states of:

- Arizona
- California
- Colorado
- New Mexico
- Nevada
- Utah

Projects the Southwest Region has participated in include grant collaboration projects, CAE Knowledge Unit/Criteria Workshops, Cyber Competition design and implementation consultation, faculty development activities including faculty train-the-trainer courses in a variety of cybersecurity topics at our facility in California, and support to attend workshops provided by the CAE National Resource Center.

Building a strong Cyber Education Workforce is our goal and the Southwest Region is also pleased to be working with our K-12 partners across the region to develop cybersecurity pathways and templates that align with the CAE Knowledge Units and the NICE Framework.

#### **DESIGNATIONS**

• CAE - Cyber Defense 2-Year Education

#### **CONTACT INFORMATION**

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### DAKOTA STATE UNIVERSITY



Dakota State University (DSU) in Madison, SD, was appointed as a CAE Regional Resource Center (CRRC) in the fall of 2016 by the National Security Agency (NSA). As the representative institution for the seven states of Minnesota, Iowa, Missouri, Kansas, Nebraska, South Dakota, and North Dakota, DSU has led the increase in interest and institutional designations for the CAE program. In addition to being a designated CRRC, DSU is one of a select few institutions that hold all three CAE designations. On a national level. DSU in its role as a CRRC has been given the responsibility to address cyber security faculty shortage. This has been addressed through nationwide professional faculty development trainings on curricular topics that are aligned to the Knowledge Units of the designation programs. In 2018 a workshop was help in Sioux Falls, SD and 100 faculty (capacity) from 28 states and Puerto

Rico attended. In 2019 there are two workshops scheduled: The week of May 28 in St. Paul, MN, and the week of August 5 in Las Vegas, NV. DSU is also a CRRC resource relative to the plethora of programs that its faculty and students participate in. This includes CyberCorps and GenCyber. They boast the largest residential camp in the nation and have provided camps in North Dakota and Hawaii. The camps cover the full array of age and gender groups: middle school girls camp, rising high school camps, and secondary teacher camps.

DSU in its role as the North Central CRRC looks forward to the continued growth of the CAE program under the leadership of NSA/DHS. The inaugural Director of the North Central CRRC is Dr. Wayne E. Pauli, a Professor of Computer and Cyber Sciences at Dakota State University.

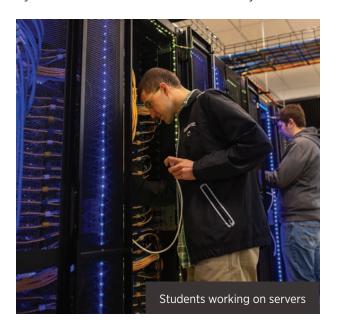
#### **DESIGNATIONS**

- CAE Cyber Defense Education
- CAE Cyber Defense Research
- CAE Cyber Operations

#### **CONTACT INFORMATION**

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# FORSYTH TECHNICAL COMMUNITY COLLEGE



Forsyth Technical Community College is the NSA/ DHS Center of Academic Excellence Regional Resource Center (CRRC) for the Central Eastern Region (NC, VA, WV, KY). In this capacity, Forsyth Tech provides leadership to advance cyber defense education among K-12 students, and instructors in the Central Eastern Region. Forsyth Tech uses funding through our CAE grant mandate to infuse cybersecurity awareness through professional development opportunities to CAE community instructors and prospective security instructors. We provide support to all currently designated CAE institutions and new institutions seeking CAE designation. Within this grant as part of the K-12/ KU initiative, the college conducts various cyber security workshops specifically to build awareness in K-12 arena for instructors and students.

#### **Grant Project Impact**

- Provided cybersecurity content curriculum and interactive hands-on learning platform to Winston Salem Forsyth County and Stokes County elementary and middle schools.
- Provided over 60 teachers an opportunity to attend and participate in professional development opportunities.
- Through K-12 partnerships and community outreach, provided over 500 students with resources and learning opportunities which includes, but not limited to, attending industry tours, cybersecurity safety training, and robotics training.
- Partner with a Winston Salem Forsyth County School to provide PC repair mentors to NAF Academy Information Technology Students.

#### **DESIGNATIONS**

• CAE - Cyber Defense Education

#### **CONTACT INFORMATION**

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crrc.forsythtech.edu





# MOHAWK VALLEY COMMUNITY COLLEGE



Mohawk Valley Community College (MVCC) holds the designation of CAE-CDE as of June 2016 and has been appointed as a CAE Regional Resource Center (CRRC) for the Northeast by the NSA and DHS. The mission of the Northeast CRRC is to perform outreach and build relationships with educational institutions in the region, as well as guide candidate colleges in the area on the path to designation as a CAE-CD institution.

As the Northeast CRRC, MVCC has:

- Promoted collaboration and resource sharing
- Conducted faculty professional devt. workshops
- Provided ongoing support to CAE institutions
- Assisted candidate institutions on program devt.
- Developed curriculum for cybersecurity CAE programs

Recently, MVCC collaborated with faculty from CAE-designated institutions in the Northeast as well as Career and Technical Education (CTE) educators and administrators to meet two needs: 1) A professional development course for CTE instructors transitioning to cybersecurity and 2) A cybersecurity CTE curriculum that aligns with the CAE Knowledge Units. The professional development course was piloted in Summer 2018 and was wellreceived. Its hybrid modality, focus on hands-on activities, and associated certification exam led to newly qualified and prepared cybersecurity CTE instructors. This curriculum is in the final stages of development and is designed to be customizable to meet any scheduling or modality preference of the CTE provider. Any CTE provider or state-level CTE curriculum officials can use the curriculum; the draft is already in use as a cybersecurity CTE framework.

#### **DESIGNATIONS**

• CAE - Cyber Defense Education

#### **CONTACT INFORMATION**

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### MORAINE VALLEY COMMUNITY COLLEGE



The faculty and staff at Moraine Valley Community College (MVCC) serve as a CAE Regional Resource **Center (CRRC)** for 5 states and 32 institutions in the Midwest region. As a CRRC, we take a leadership role in promoting the NSA CAE program in highlighting the excellence and uniqueness of the programs in the Midwest region. Members of our team are also very active in mentoring new institutions in the CAE application process and supporting schools preparing for re-designation. The Midwest CRRC is also very active in building a community of excellence and best practices. This includes providing faculty development opportunities, promoting collaboration between institutions, and pursuing and disseminating grant opportunities. As a CRRC, our team also promotes and operates a number of student-oriented activities and competitions. These activities include the

Collegiate Cyber Defense Competition, the National Cyber League, US Cyber Challenge, and Cyber Patriots. The center is also involved in hosting and promoting cybersecurity job fairs.

The MVCC team is involved in improving the CAE program through several initiatives. The center recently developed a CAE articulation database and is involved in a research project studying the need for expanding cybersecurity K-12 career pathways programs. The center has received funding to develop a virtual PLC and SCADA lab that can be replicated and shared with other CAE institutions. Members of our team are involved in reviewing and providing community input for improving the CAE annual evaluation and reporting process.

#### **DESIGNATIONS**

• CAE - Cyber Defense 2-Year Education

#### **CONTACT INFORMATION**

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### NORTHEASTERN UNIVERSITY



As a **CAE Regional Resource Center, Northeastern University** provides assistance to all CAEs and four-year colleges aspiring to become a CAE in the Northeast region. Assistance includes, but is not limited to:

- Facilitating exchanges of ideas among CAEs to improve communication
- Facilitating exchanges of teaching materials and development of laboratories
- Providing a forum for CAEs to discuss fundraising issues to help their programs
- Recruiting and training CAE faculty members to serve as program reviewers
- Recruiting colleges and universities to become CAEs
- Providing advice to aspiring institutions on the CAE application process and their curriculum

#### **DESIGNATIONS**

- CAE Cyber Defense Education
- CAE Cyber Defense Research
- CAE Cyber Operations

#### CONTACT INFORMATION

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Northeastern University, in conjunction with Mohawk Valley Community College (MVCC), held a two-day workshop for CAEs and local institutions interested in becoming a CAE. The workshop provided faculty members training as program reviewers, and demonstrated the setup and use of virtual laboratories for competitions. In Spring 2018, MVCC led the effort in setting up virtual laboratories for several colleges to participate in cybersecurity competitions. As a CAE-R, Northeastern University led a discussion on collaborative research activities for CAE-Rs in the northeast region. Participants were enthusiastic in continuing the conversation.

Northeastern University also led a team of five institutions to study the problem of cybersecurity faculty shortage. Based on the results of an online survey, the team found that the shortage was felt by all CAEs and courses were often cancelled due to lack of qualified instructors. In order to find ways to mitigate the problem, Northeastern University led an effort in surveying both government and private industries to identify industry needs, where shortages lie, and what cross-sector collaborations can be set up to mitigate the pressing problem.





# NORTHERN VIRGINIA COMMUNITY COLLEGE



Northern Virginia Community College (NOVA) serves as a CAE National Resource Center (CNRC) for the CAE program, with a focus on managing the Peer Review process for candidate Centers of Academic Excellence (both two-year and fouryear). As a part of this effort, NOVA has trained more than 125 faculty members from two-year and four-vear institutions across the nation to to review applications submitted to NSA for CAE-CDE/CAE2Y designation. Additionally, we have managed more than 150 faculty peer reviews of applicant schools. The impact of the Peer Review process is that it has reduced the time it previously took for a school to have its application reviewed for designation. On average, Peer Reviewers are completing their reviews within two weeks.

NOVA also supports several Regional Resource

Centers, providing Faculty Professional Development under a previous NSA award. This included providing the following training sessions to universities and colleges from as far away as Puerto Rico:

- Security+
- Ethical Hacking
- Cyber Threat Hunting Workshop

Northern Virginia Community College is the second largest community college in the United States with more than 1400 students in its Cybersecurity AAS degree program and is one of the most internationally diverse colleges in the United States, with a student body consisting of individuals from more than 180 countries.

#### **DESIGNATIONS**

• CAE - Cyber Defense 2-Year Education

#### **CONTACT INFORMATION**

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# SAN ANTONIO COLLEGE

SAN ANTONIO COLLEGE



The NSA and DHS appointed the **San Antonio College Computer and Information Science Department (SAC CIS)** a **CAE Regional Resource Center** in 2016 to assist other two- and four-year colleges and universities with obtaining CAE or CAE-2Y designation for their Information Assurance and Cybersecurity programs. Three full-time SAC CIS faculty members, including the Lead Principal Investigator for this project, provide individual technical assistance, CAE application workshops, and regional professional development to 16 higher education institutions in Texas, four in Oklahoma, two in Arkansas, and three in Louisiana.

The Regional Resource Center focus of activities has been on recruiting and maintaining institutions in the region. Five new CAE institutions have been added to the current South Central Region and

three successful renewals set the number of CAE institutions at 28. Current efforts are fostering the South Central community and creating opportunities for collaboration among CAE schools.

As a leader in the community, San Antonio offers an Information Technology and Security Academy (ITSA) dual credit program, designed for high school juniors and seniors where they can earn 30 hours of college credit in cybersecurity. After completion of this program, they will earn two level 1 certificates. This program includes credit for a paid summer internship at a local industry working in the cyber field. The ITSA program creates a pathway from K-12 into various IT related Associate of Applied Science degrees at the college level, including Information Assurance and Cybersecurity.

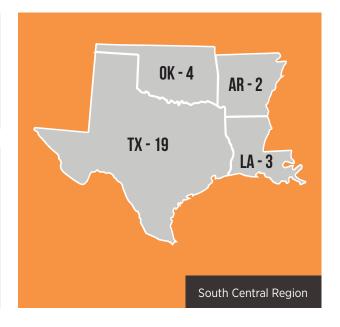
#### **DESIGNATIONS**

• CAE - Cyber Defense 2-Year Education

#### **CONTACT INFORMATION**

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### HOUSTON

### UNIVERSITY OF HOUSTON



The University of Houston serves as a CAE National Resource Center (CNRC). The CNRC for Knowledge Unit (KU) Development is the focal point for academic community to manage the KUs which form the foundational element of the CAE program. The KUs describe the academic elements of the programs that are recognized by the CAE program. The content of the KUs are developed by and maintained by the academic community at large. This effort is mediated by a wiki that supports a social network of academics. The KUs are grouped into foundational elements, technical and nontechnical core, and optional KUs.

Knowledge Units define the student learning outcomes, the topics, and the skills/competencies that are associated with the KU. Additional elements such as textbooks and supporting educational

elements are also shared. The KUs are organized by the NICE Cybersecurity Framework categories.

The academic community provides input via the CNRC to the CAE program office for updating the KUs with each program year. This continues to expand the program keeping pace with the trends of cybersecurity and ensuring a solid academic foundation for the CAE program recognition.

#### **DESIGNATIONS**

- CAE Cyber Defense Education
- CAE Cyber Defense Research

#### **CONTACT INFORMATION**

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CyberEd Wiki is to foster a sharing community of educators from institutions in the Centers of Academic Excellence (CAE) program



### UNIVERSITY OF WASHINGTON



The University of Washington's (UW) Center for Information Assurance and Cybersecurity (CIAC) leads NSA's North Western CAE Regional Resource Center (CRRC), the largest CRRC geographically, encompassing the seven states of Alaska, Hawaii, Idaho, Montana, Oregon, Washington, and Wyoming. The region is economically diverse and dominated by industry which influences cybersecurity curriculum content which must address the plethora of regulatory regimes that regional industry must consider. Since becoming a CRRC, UW, partnering with Whatcom Community College, Bellingham, WA (CyberWatch West and a CAE National Resource Center), has grown the number of CAEs in the region from 7 to 17.

Dr. Barbara Endicott-Popovsky, Executive Director of CIAC, has led the Center since 2004. CIAC's

educational programs are award-winning, having been named in 2014 by Ponemon Institute as among the top 10 places to study cybersecurity in the country based on the focus on graduating critical thinkers who are breach-ready, as opposed to check list driven.

As a CRRC, CIAC shares its "rules and tools" curriculum; interdisciplinary, cross sector pedagogical approach; and research in order to assist emerging CAEs.

CIAC's purpose in advancing cybersecurity education includes:

- Efficiently closing the talent gap
- Increasing the number of cybersecurity educators

#### **DESIGNATIONS**

- CAE Cyber Defense Education
- CAE Cyber Defense Research

#### **CONTACT INFORMATION**

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# UNIVERSITY OF WEST FLORIDA



The University of West Florida serves as the NSA/DHS CAE Regional Resource Center (CRRC) for the Southeast. In this capacity, UWF provides leadership to advance cyber defense education among colleges and universities in Alabama, Florida, Georgia, Mississippi, Puerto Rico, and South Carolina. UWF also provides support to all designated and candidate CAE institutions.

The **UWF Center for Cybersecurity** hosted the inaugural Southeast Cybersecurity Conference (SECC) on July 26-27, 2018, in Orlando, FL. More than 70 cybersecurity education experts from across the southeast shared their expertise and explored collaboration opportunities at the two-day conference, which featured over 20 workshops and networking sessions. UWF also hosted a variety of professional development workshops on emerging

#### **DESIGNATIONS**

• CAE - Cyber Defense Education

#### **CONTACT INFORMATION**

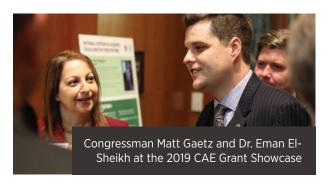
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uwf.edu/cybersecurity

topics, including Critical Infrastructure and Industrial Control Systems Security, CAE Application and Knowledge Unit (KU) Mapping and more.

UWF provides CAE program development support to over 12 candidate CAE institutions across the Southeast, including curricular development, KU mapping, mentoring, CAE application assistance, and workshops. The UWF Center for Cybersecurity launched the Florida Cyber Range pilot program in 2018 to support competency-based learning for CAE institutions in the Southeast. The Florida Cyber Range is a state-of-the-art virtual environment that can simulate or emulate an organization's networks and environments and provides hands-on training and testing solutions. UWF hosts cyber defense competitions using the Range to allow faculty at CAE institutions to integrate competency-based learning into their courses and programs.

UWF hosted the 2019 CAE Executive Leadership Forum on April 24-25 in Pensacola Beach, FL, which brought executives from academia, industry, government, and military from across the country to collaborate and seek strategies for advancing cybersecurity education and workforce development.





# WHATCOM COMMUNITY COLLEGE



**Whatcom Community College** is strengthening the cybersecurity workforce by assisting educational institutions nationwide.

The National Security Agency (NSA) selected Whatcom Community College (WCC) to lead efforts to improve and expand cybersecurity education nationwide as one of four **Centers of Academic Excellence National Resource Centers (CNRC)**. In this role, Whatcom leads the CAE-CD Application Assistance Program, guiding university and college administrators and faculty to reach industry recognized standards of education and training and meet the rigorous application requirements for the CAE-CD designation.

WCC works actively to enhance and foster cybersecurity education programs at colleges and

universities resulting in a more plentiful and better prepared national cybersecurity workforce. The National Science Foundation initially funded the CAE-CD Application Assistance Program enabling WCC to help more than 250 colleges over the past six years.

Currently, there are 103 institutions from 40 states in the pipeline working toward CAE designation including 52 two-year institutions and 51 four-year universities. With guidance and assistance from WCC, 31 community colleges and 14 universities gained CAE designation. To date, there are CAE education institutions in 47 U.S. states and Puerto Rico.

#### **DESIGNATIONS**

• CAE - Cyber Defense 2-Year Education

#### **CONTACT INFORMATION**

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whatcom.edu/cybercenter



#### **DoD Cyber Scholarship Program (CySP)**

The Department of Defense (DoD) Information Assurance Scholarship Program (IASP) was created in 2001 to provide scholarship grants to CAE-designated schools in an effort to encourage qualified students to start their careers at the Department of Defense. In the 2018 National Defense Authorization Act, Congress changed the name to the Cybersecurity Scholarship Program (CySP). Similar to the National Science Foundation's CyberCorps scholarship program, CySP is Scholarship For Service (SFS), allowing students to pay back their scholarship with service for a time equivalent to the length of their scholarship. Since its inception in 2001, this program has provided over \$92 million for scholarships and education capacity and supported 686 scholars at 105 CAE-CD institutions. The program continues to be administered by the CAE-CD Program Management Office and overseen by the DOD Chief Information Officer.

There are two scholarship opportunities within CySP. Recruitment students are new students recruited by the CAEs for this program. Retention students are military members and DoD civilians pursuing a degree. All undergraduate students are required to maintain a 3.2 grade point average and graduate students a 3.5 grade point average. All students incur a service commitment equal to the number of years they receive a scholarship. Students must be US citizens and must qualify for a security clearance. The CAE-CD or CAE-CO faculty member must provide a recommendation and endorsement of the veracity of the application.

Recruitment students receive the full cost of tuition, books required for the program, required fees (including health care), and a stipend to cover room and board. In FY2019, the stipend levels are \$20,000 for community college students (pilot program), \$25,000 for undergraduate students and \$30,000 for graduate (Master's/PhD) students. Other benefits include:

- Academic scholarships covering full tuition, applicable fees, and books
- Paid *Internships* in cyber roles at the DoD
- Travel expenses for cyber conferences and other learning and networking opportunities
- A cyber-related job within the DoD following graduation (pending clearance)

Retention students are recruited by their DoD employer organization. The organization must commit to giving the student approval for possible time away from the job so the student may attend one of the full-time programs or provide a flexible work schedule to allow part-time opportunities. They also must have positions available that will utilize the student's degree.

There are three programs available to retention students:

- National Defense University College of Information and Cyber + Partner CAE (open to graduates of select College of Information and Cyberspace (CIC) certificate programs). NDU collaborates with CAE-designated schools; students attend a short program at NDU, and then finish at the CAE school
- Air Force Institute of Technology
- Naval Postgraduate School

Students selected as Cyber Scholars will receive the full cost of tuition, required books, required fees, and potential travel for degree specific events. Retention Scholars will continue to receive

their DoD/Military pay and will be required to perform a service obligation to their parent agency or component.

#### **Grants**

The CAE-CD program has not had funding to provide grants in every fiscal year, but periodically receives funding from Congress to accelerate growth of the program and encourage research. In FY2015, Congress allocated six million for research, which was subsequently awarded to CAE-CD designated institutions. In FY2016, Congress allocated one million for grants to CAE-2Y designated institutions. Part of this funding was used to establish the first six CRRCs. In FY17, the program received \$25 million from the President's budget, which facilitated establishment of the CNRCs and remaining three CRRCs in addition to allowing the program office to issue 45 grants for projects at designated institutions. A database with information on all of these grants, their POCs, and a short description of the project is now available on the CAE Community website (caecommunity.org) to those qualifying for a CAE Community account.

#### **Federal Partners**

CAE-C program success is due in large part to federal departments and agencies that are close partners in cybersecurity workforce education and development. In addition to DoD CIO, close partners include:

- Department of Homeland Security (DHS), Cybersecurity and Infrastructure Security Agency (CISA), Cybersecurity Education and Awareness (CE&A) Branch. As the official partners of the CAE-CD program, DHS helps foster the growth of the program as part of their outreach to states and local communities. CISA also manages the National Initiative for Cybersecurity Careers and Studies (NICCS) and offers free online cybersecurity education to federal employees and military through the Federal Virtual Training Environment (VTE). Visit niccs.us-cert.gov for more information.
- The National Initiative for Cybersecurity Education (NICE). As part of the National Institute of Standards and Technology (NIST) in the Department of Commerce, NICE focuses on efforts to close the hiring gap in the cybersecurity workforce. The Annual CAE Community Symposium is supported by a grant from NICE. The NICE Challenge Project, which develops real world cybersecurity tasks that are aligned to the NICE Cybersecurity Workforce Framework presented within virtualized business environments bring students the workforce experience before entering the workforce, is funded by NICE and the NSA College of Cyber. The CAE-CD program office participates with the NICE Interagency Coordinating Council, which offers opportunities for federal departments and agencies to share information and collaborate on areas of common interest. CAE-CD KUs are mapped to the NICE Framework, and designated programs align to the NICE Framework Specialty Areas. Visit nist.gov/nice for more information.

The National Science Foundation (NSF) encourages and funds projects that will generate new knowledge about effective cybersecurity education, re-skill workers to meet cybersecurity education needs, prepare nontraditional students to reenter the educational system, increase the diversity of the cybersecurity workforce, use applied research experiences to build skills and

competencies for real-world scenarios, and build effective collaborations between educational institutions, business, industry, and government. NSF and CAE-CD interests frequently align, and the CAE-CD program has benefited from the NSF investment on numerous occasions. For more information, visit www.nsf.gov Most closely related to the CAE-CD are:

- The CyberCorps®: Scholarship for Service (SFS) program. The SFS program, co-sponsored by the U.S. Office of Personnel Management (OPM), and Department of Homeland Security (DHS), includes scholarship and capacity-building components that attract high-caliber students from institutions designated by the CAE-CD program and selected by NSF through a competitive process.
- The National Defense Authorization Act for Fiscal Year 2018 gave NSF, in coordination with the Office of Personnel Management, authorization to develop and implement a C3P program as part of NSF's CyberCorps®: Scholarship for Service (SFS) program. Specifically, the act authorizes scholarships for students who are bachelor's degree recipients or veterans of the Armed Forces, or who are pursuing associate degrees or specialized program certifications in the field of cybersecurity. Five CAE-CD designated institutions are participating C3P.
- NSF also manages the Advanced Technological Education (ATE) program, which is currently
  funding centers in eight major technology areas. Two ATE programs, the National Center for
  Systems Security and Information Assurance (CSSIA) and CyberWatch West are managed by
  CAE-CD CRRCs.

#### **Academic Institutions Offering CAE-CD Designated Programs**

As of November 1, 2019, there are 312 designated institutions across 48 states, the District of Columbia, and Puerto Rico. There are 108 Community Colleges offering Associate programs and degrees. Many of our designees hold multiple designations; 47 hold both CAE- CDE and CAE-R designations, six hold both CAE-CDE and CAE in Cyber Operations (CAE- CO), two hold CAE-R and CAE-CO, and ten hold all three designations: CAE-CDE, CAE-R, and CAE-CO.

Degree and certificate paths range from concentrations in cybersecurity to bachelors and masters in cybersecurity and cyber defense. Top research focus areas are Hardware Security, Cryptology, Digital Forensics, and Network Hardening.

Designated institutions were invited to provide profiles of their programs for this publication. Those who were able to do so according to the publication deadlines are profiled alphabetically in this section. The following is an alphabetical list of designated programs by institution name, with their state. For a listing of institutions by state, or for more information, visit www.iad.gov/NIETP/reports/cae\_designated\_institutions.cfm

### **Designated Programs by Institution**

Air Force Institute of Technology	Ohio
American Public University System	West Virginia
Anne Arundel Community College	Maryland
Arapahoe Community College	
Arizona State University	Arizona
Auburn University	
Augusta Technical College	
Augusta University	
Baker College	-
Bellevue University	_
Bismarck State College	
Bloomsburg University of Pennsylvania	
Blue Ridge Community & Technical College.	
Bluegrass Community and Technical College	_
Bossier Parish Community College	
Boston University	
Bowie State University	
Brigham Young University	
Brookdale Community Collge	
Butler Community College	
Calhoun Community College	
California State Polytechnic University, Pom	
-	
California State University San Marcos	
California State University, Sacramento	
California State University, San Bernardino.	
Capella University	
Capitol Technology University	
Carnegie Mellon University	
Cecil College	
Cedarville University	
Central New Mexico Community College	
Century College	
Champlain College	
City College of San Francisco	
City University of Seattle	-
Clark State Community College	
Clemson University	
Coastline Community College	
College of DuPage	
College of Southern Maryland	
College of Southern Nevada	
Colorado School of Mines	
Colorado State University-Pueblo	
Colorado Technical University	Colorado
Columbia Basin College	
Columbus State Community College	Ohio
Columbus State University	
Community College of Rhode Island	Rhode Island
County College of Morris	New Jersey
Cypress College	
Dakota State University	South Dakota
Danville Community College	Virginia
Dartmouth College	New Hampshire
Davenport University	Michigan

Daytona State College	Florida
Delta College	
DePaul University	
Drexel University	
East Carolina University	
East Stroudsburg University	
Eastern Michigan University	
ECPI University	
Edmonds Community College	
El Paso Community College	
Embry-Riddle Aeronautical University	
Embry-Riddle Aeronautical University	
ENMU - Ruidoso Branch Community Colleg	
Estrella Mountain Community College	
Excelsior College	
Fairleigh Dickinson University	
Fayetteville Technical Community College	
Ferris State University	
Florida A&M University	
Florida Atlantic University	
Florida Institute of Technology	Florida
Florida International University	Florida
Florida State College at Jacksonville	Florida
Florida State University	Florida
Fordham University	New York
Forsyth Technical Community College	
Fort Hays State University	Oklahoma
Franklin University	
George Mason University	
Georgetown UniversityDis	_
Georgia Institute of Technology	
Georgia Southern University - Armstrong	
Germanna Community College	_
Glendale Community College	
Grand Canyon University	
Grand Rapids Community College	
Great Falls College Montana State Universi	•
Green River College	
Hagerstown Community College	
Hampton University	
Harford Community College	
Henry Ford College	
Highline College	Washington
Hill College	
Honolulu Community College	Hawaii
Houston Community College	Texas
Howard Community College	Maryland
Idaho State University	ldaho
Illinois Institute of Technology	Illinois
Illinois State University	Illinois
Indian River State College	Florida
Indiana University of Pennsylvania	
Indiana University	

vy lech Community College	Indiana
ackson State Community College	Tennesse
acksonville State University	Florida
ames Madison University	
ohn A Logan College	
ohnson County Community College	
ansas State University	
ennesaw State University	
ake Superior College	
ansing Community College	Michigar
aredo College	
eeward Community College	
ehigh Carbon Community College	Pennsylvania
eMoyne–Owen College	Tennessee
ewis University	Illinois
iberty University	Virginia
incoln Land Community College	Illinois
ong Beach City College	California
ord Fairfax Community College	Virginia
ouisiana Tech University	Louisiana
lacomb Community College	Michigar
ladison College	Wisconsir
larquette University	Wisconsin
larymount University	Texas
IcLennan Community College	Texas
lercy College	New York
letropolitan Community College - Kansa	
letropolitan Community College	
letropolitan State University	Minnesota
liddle Georgia State University	Georgia
lississippi State University	
lissoula College	
lissouri University of Science and Techno	ologyMissour
Iohawk Valley Community College	New Yorl
lontreat College	North Carolina
loraine Valley Community College	
lorgan State University	
It. Hood Community College	
lurray State University	
lational University	
laval Postgraduate School	
lew Jersey City University	
lew Jersey Institute of Technology	
lew Mexico Tech	
lew York Institute of Technology	
lew York University	
lorfolk State University	
lorth Carolina A&T State University	
lorth Carolina State University	
orth Dakota State University	
lorth Idaho College	
lortheast Community College	
lortheastern University	
lortheastern University	Vontuska

### **Designated Programs by Institution**

Northern Virginia Community College	_
Norwich University	
Nova Southeastern University	
Oakland University	
Ohlone College	
Oklahoma City Community College	
Oklahoma State University	
Old Dominion University	-
Our Lady of the Lake University	
Owensboro Community and Technical College	
Pace University	New York
Pennsylvania Highlands Community College	
Pennsylvania State University	Pennsylvania
Pikes Peak Community College	Colorado
Polytechnic University of Puerto Rico	Puerto Rico
Portland Community College	Oregon
Prince George's Community College	Maryland
Pueblo Community College	Colorado
Purdue University Northwest	Indiana
Purdue University	Indiana
Radford University	Virginia
Red Rocks Community College	Colorado
Regent University	
Regis University	Colorado
Robert Morris University	Illinois
Rochester Institute of Technology	New York
Rock Valley College	Illinois
Rockland Community College	
Roosevelt University	Illinois
Rose State College	Oklahoma
Rutgers, The State University of New Jersey	
Saint Leo University	
Sampson Community College	
San Antonio College	
Sierra College	California
Sinclair Community College	Ohio
Snead State Community College	
South Carolina State University	South Carolina
South Texas College	Texas
Southeast Missouri State University	Missouri
Southern Maine Community College	Maine
Southern Methodist University	Texas
Southern Utah University	
Southwest Virginia Community College	Virginia
Spokane Falls Community College	Washington
St. Cloud State University	Minnesota
St. Louis Community College	Missouri
St. Petersburg College	Florida
St. Philip's College	Texas
Stevens Institute of Technology	New Jersey
Syracuse University	
Tennessee Tech University	
Terra State Community College	Ohio
Texas A&M University-Corpus Christi	Texas

Texas A&M University–San Antonio	
Texas A&M University	
Texas State Technical College in Harlingen	
The Citadel	
The Community College of Baltimore County	-
The George Washington UniversityDist	rict of Columbia
The Johns Hopkins University	Maryland
The Ohio State University	Ohio
The University of Alabama at Birmingham	Alabama
The University of Alabama in Huntsville	Alabama
The University of Alabama	Alabama
The University of Arizona, Tucson	Arizona
The University of Tennessee at Chattanooga.	Tennessee
The University of Texas at Austin	Texas
The University of Texas at San Antonio	Texas
Thomas Nelson Community College	Virginia
Tidewater Community College	Virginia
Towson University	Maryland
Trident Technical College	.South Carolina
Tuskegee University	Alabama
United States Air Force Academy	Colorado
United States Naval Academy	Maryland
University at Albany, the State Uni. of New Y	orkNew York
University at Buffalo, the State Uni. of New Y	orkNew York
University of Advancing Technology	Arizona
University of Arkansas at Little Rock	
University of Arkansas	Arkansas
University of California, Davis	California
University of California, Irvine	California
University of Central Florida	Florida
University of Cincinnati	0hio
University of Colorado, Colorado Springs	Colorado
University of Connecticut	Connecticut
University of Dallas	Texas
University of Delaware	Delaware
University of Denver	Colorado
University of Detroit, Mercy	Michigan
University of Florida	Florida
University of Georgia	Georgia
University of Hawai'i - Manoa	Hawai'i
University of Hawai'i - Maui College	Hawai'i
University of Hawai'i - West O'ahu	Hawai'i
University of Houston	Texas
University of Idaho	Idaho
University of Illinois at Springfield	Illinois
University of Illinois, Urbana-Champaign	
University of Kansas	
University of Louisville, Kentucky	
University of Maine at Augusta	
University of Maryland University College	
University of Maryland, Baltimore County	
University of Maryland, College Park	
University of Massachusetts Lowell	
University of Memphis	

Jniversity of Missouri - Columbia	Missouri
Jniversity of Missouri-St. Louis	Missouri
Jniversity of Nebraska, Omaha	Nebraska
Jniversity of Nevada, Las Vegas	Nevada
Jniversity of New Hampshire	New Hampshire
Jniversity of New Haven	Connecticut
Jniversity of New Mexico	New Mexico
Jniversity of North Carolina, Charlotte	North Carolina
Jniversity of North Carolina, Wilmington	North Carolina
Jniversity of North Florida	Florida
Jniversity of North Georgia	Georgia
Jniversity of North Texas	Texas
Jniversity of Pittsburgh	Pennsylvania
Jniversity of Rhode Island	Rhode Island
Jniversity of South Alabama	Alabama
Jniversity of South Carolina	South Carolina
Jniversity of South Florida	Florida
Jniversity of Texas at Dallas	Texas
Jniversity of Texas at El Paso	Texas
Jniversity of the Cumberlands	Kentucky
Jniversity of Tulsa	Oklahoma
Jniversity of Virginia	Virginia
Jniversity of Washington	Washington
Jniversity of West Florida	Florida
Jniversity of Wisconsin-Stout	Wisconsin
Jtica College	New York
/alencia College	Florida
/alley Forge Military College	Pennsylvania
/irginia Commonwealth University	Virginia
/irginia Polytechnic Institute & State Unive	ersityVirginia
/irginia Western Community College	Virginia
Nalden University	Minnesota
Nalsh College	Michigan
Naukesha County Technical College	Wisconsin
Nebster University	Missouri
West Chester University of Pennsylvania	Pennsylvania
Nest Virginia University	West Virginia
Westchester Community College	New York
Whatcom Community College	Washington
Nichita State University	Kansas
Nilmington University	Delaware
Norcester Polytechnic Institute	Massachusetts



# AIR FORCE INSTITUTE OF TECHNOLOGY



Air Force Institute of Technology has a long and well-recognized history of providing cutting-edge, cyber-focused graduate education and research. Its education programs address both defensive and offensive operations, as well as acquisition and sustainment issues. AFIT awards an average of 32 cyber-related MS degrees and three PhD degrees annually; approximately half are MS of Cyber Operations and the remaining are Computer Science, Computer Engineering, and Electrical Engineering.

AFIT's Center for Cyberspace Research was established in March 2002 and conducts cyber operations research at the Master's and PhD levels. Research objectives are closely aligned with evolving and anticipated Air Force and Defense Department needs, with current lines of effort in human factors in cyber operations, multi-domain operations, software

defined networking, physical layer security, cyber physical and embedded systems, and cyber resilience in weapon systems.

AFIT collaborates actively with other DoD and Federal government organizations, civilian universities, and industry. AFIT is a co-founder of the Cincinnati- Dayton Cyber Corridor (Cin-Day Cyber), whose long-term goals include advancing cybersecurity education (to include growing the number of CAE schools), promoting research collaboration among higher education schools, establishing government and industry (employer) partnerships, and developing the regional workforce.

#### **DESIGNATIONS**

• CAE - Cyber Defense Research

#### CONTACT INFORMATION

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www.afit.edu





### AMERICAN PUBLIC UNIVERSITY SYSTEM



Founded in 1991 as American Military University to serve the needs of a highly-mobile military, we are committed to serving our students and the broader community. Today, as **American Public University System (APUS)**, we serve more than 80,000 adult learners worldwide and offer more than 200 degree and certificate programs -- in cybersecurity and other specialized fields such as intelligence studies, the latter up to the doctoral level -- that prepare our students for leadership and service in a diverse, changing world.

APUS was the first 100% online institution to be recognized by the Online Learning Consortium for Best Practices in Online Education. In 2018 alone, our faculty published more than 700 contributions to their disciplines and received more than 250 awards for their scholarship and instruction. More

than 60% hold a terminal degree, and currently hold leadership positions with major companies and government agencies. In addition, since 2012, 43 APUS students have been finalists in the Presidential Management Fellows program and, in 2018, we celebrated a record class of more than 11,000 graduates—the true measure of our success.

We strive to expand access to a quality higher education by keeping our programs affordable and leading-edge. APUS's online bachelor's programs have been recognized for quality and affordability by U.S. News & World Report and Washington Monthly, respectively. APUS is also building an advanced learning platform by investing in game-based learning and simulation to strengthen student engagement and learning outcomes.

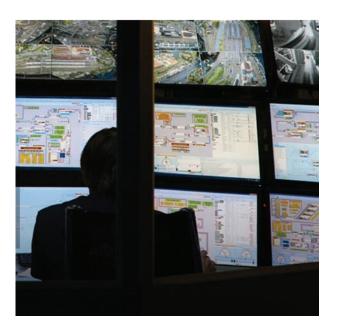
#### **DESIGNATIONS**

• CAE - Cyber Defense Education

#### CONTACT INFORMATION

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# ANNE ARUNDEL COMMUNITY COLLEGE



Anne Arundel Community College (AACC) was one of the first community colleges designated as a National Center of Academic Excellence in Cyber Defense Two-Year Education by the NSA and the U.S. Department of Homeland Security. AACC was also the first institution in the nation to be designated a National Center of Digital Forensics Academic Excellence (CDFAE) by the Defense Cyber Crime Center. CDFAE is the academic component of a partnership with government to create standards and best practices for digital forensics practitioners, educators, and researchers.

AACC offers Associate of Applied Science (A.A.S.) degrees and certificates in Information Assurance and Cybersecurity. These programs allow students to Implement real-world tools and scenarios to prepare for a career in Cybersecurity, Networking, and Digital Forensics. Students have access to the

latest hardware and software necessary to provide comprehensive hands-on training. This experience enables individuals to gain the required knowledge and skills to be successful in cybersecurity related fields. Training includes, but is not limited to, the following technical areas of study:

- Networking
- Windows and Linux Server Administration
- Digital and Network Forensics
- Advanced Network Defense
- Network Intrusion Detection/Penetration Testing
- Ethical Hacking

The state of Maryland refers to the A.A.S. as a career degree, because it's intended to provide you with skills to enter the workforce. In some cases, AACC also has developed articulation agreements allowing students to transfer to select colleges.

#### **DESIGNATIONS**

CAE – Cyber Defense 2-Year Education

#### **CONTACT INFORMATION**

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www.aacc.edu





### AUGUSTA TECHNICAL COLLEGE



Augusta Technical College is the first two-year Technical College System of Georgia (TCSG) institution to hold the National Center of Academic Excellence in Cyber Defense Two-Year Education (CAE2Y) designation. The College has a long-standing tradition and successful history of producing quality IT graduates. Along with Cybersecurity, we also offer degrees in Computer Programming, Networking Specialist, and Computer Support, as well as specialized Technical Certificates of Credit and numerous industry related certifications.

The Computer Programming Specialist program has been producing well-trained and competent programmers for over 30 years. During the same time period, the Computer Support Specialist program has been producing graduates fully prepared to fulfill multiple occupational roles in

support of current computing infrastructure trends to include data center operations, virtual machine computing, and cloud service technologies.

The Networking Specialist program, which was the first in the Technical College System of Georgia (TCSG), was started over 20 years ago. This program has adopted new and emerging networking technologies to meet the needs of local and state industry. Augusta Technical College was designated a Cisco Networking Academy over 20 years ago, as well as a Microsoft IT Academy for 14 years. The networking classes have always had a strong emphasis on security practices. The program has been taught in a performance-based environment with the occupational goal of preparing students to be workforce-ready and able to pass industry certifications during and upon completion of their programs.

#### **DESIGNATIONS**

CAE-Cyber Defense 2-Year Education

#### **CONTACT INFORMATION**

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www.augustatech.edu





# **AUGUSTA UNIVERSITY**



**Augusta University** was designated as a Center of Academic Excellence in Cyber Defense in 2016. The university has a deep history in computing education, as it has granted baccalaureate degrees in computer science and information technology since the 1980's. Today we are growing at an unprecedented rate, offering several undergraduate majors and a master's program, with future plans to adopt a doctoral program as well.

The University's Cyber Institute was founded in 2015. The Institute supports and champions meaningful innovative interdisciplinary research and education for cyber security with focus on collaborative partnerships that impact K-12 education, healthcare, government, and business communities. The Institute participates in community outreach activities, such as Girls Who Code and hosting GenCyber camps.

The School of Computer and Cyber Sciences at Augusta University was founded 2017. The School encompasses all our academic and research programs in Information Technology, Computer Science and Cybersecurity, and the activities of the Cyber Institute.

In 2018, nine Augusta University students were the recipients of the Department of Defense Cybersecurity Scholarship, receiving 19% of the scholarships awarded nationwide. Since 2017, 11 Augusta University School of Computer and Cyber Science students have received this prestigious scholarship.

#### **DESIGNATIONS**

• CAE - Cyber Defense Education

#### **CONTACT INFORMATION**

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www.augusta.edu/ccs





### **BELLEVUE UNIVERSITY**



**Bellevue University,** a non-profit university with more than 50,000 graduates, is one of the nation's leaders in preparing students for lifelong career success. Routinely ranked among the nation's top-military friendly and accessible institutions, Bellevue University offers innovative education programs that produce professionals who are well-trained and have full mastery of the skills needed to protect our nation's infrastructure.

With more than 80 degrees offered through online and on campus programs, including a Bachelor and Master of Science in Cybersecurity, a Graduate Cybersecurity Certificate, and several programs offering a cybersecurity emphasis, Bellevue University stands at the forefront of applied cybersecurity education. Through its Center for Cybersecurity Education, the University offers a range of interdisciplinary degrees that bring

together information assurance, business, systems and network administration, security management, and more.

A team of qualified, passionate faculty with extensive experience in professional environments ranging from U.S. military to Fortune 500 organizations to technology start-ups, helps ensure students are prepared to tackle real life challenges across the information technology spectrum. The new C&A Industries Intelligence Systems Lab on Bellevue University's Nebraska campus leverages the common technical ground that exists among the fields of cybersecurity, systems and network administration, and data science. Starting in 2019, the lab will serve as a state-of-the-art venue to train security operations and provide students with the opportunity to learn and practice skills in a virtualized environment using a suite of open-source and commercial tools.

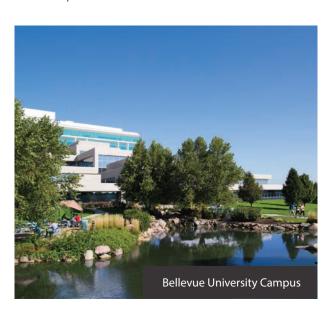
#### **DESIGNATIONS**

CAE – Cyber Defense Education

#### CONTACT INFORMATION

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www.bellevue.edu





### BLOOMSBURG UNIVERSITY OF PENNSYLVANIA



Bloomsburg University (BU) offers the only digital forensics bachelor's degree in the Pennsylvania State System of Higher Education and is Pennsylvania's Center for Digital Forensics. It is one of the top digital forensics and cybersecurity programs in the country. Classrooms and labs have professional digital forensics software and hardware installed. Courses cover all aspects of digital forensics and security. The unique virtual environment for the Bloomsburg University's digital forensics curriculum provides access for the students to conduct a wide variety of labs by having dedicated servers to host virtual machines for the students. Every course includes hands-on labs.

Bloomsburg University considers participation in cyber defense and forensics competitions an important part of student development. The University supports clubs dedicated to cyber defense and digital forensics and hosts its own security conference, BloomCon, each year.
BloomCon features an excellent mix of industry speakers and competitions for students and attendees. The conference includes competitions such as wireless network hacking, a lockpick village, and drone wars.

Bloomsburg University has excellent and well-known faculty members dedicated to teaching courses in this field of study. They come with practical experience and deep knowledge in digital forensics, criminal investigations, network security and forensics, system security, and penetration testing. Bloomsburg University Digital Forensics graduates have an extremely high placement rate. They work in law enforcement, government agencies, and the corporate world. Bloomsburg University accepts credits from over 1000 institutions.

#### **DESIGNATIONS**

CAE - Cyber Defense Education

#### **CONTACT INFORMATION**

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### BOSSIER PARISH COMMUNITY COLLEGE



#### Bossier Parish Community College (BPCC) is

committed to the area of information assurance in the growing field of cyber security as it continues its efforts to continually update our courses and programs to meet the needs of the changing work force in the area of information assurance. Since the start of our program, we have had 470 graduates.

BPCC was originally recognized as a Center of Academic Excellence in Cyber Defense Two-Year Education (CAE-2Y) under the CNSS standards. As we updated our Knowledge Units (KUs) we also mapped to the new standards as we feel there is real value in this project. In 2017, BPCC was also recognized by the State of Louisiana as the Center of Workforce Excellence in Cyber Technology. We hold both of these designations in high regard and feel it helps to demonstrate to our workforce that we set a

**DESIGNATIONS** 

• CAE - Cyber Defense 2-Year Education

for our security students.

Our campus is excited to host this year's Community

high standard of excellence in academic preparation

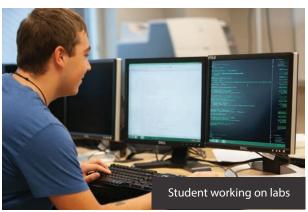
Our campus is excited to host this year's Community College Cyber Summit (3CS) to further show our desire to grow in the area of security and showcase our program and facilities to schools from across the nation. Our desire is that through hosting this conference, we can further network with other colleges and universities to continue to provide a world class education to our students.





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### **BOSTON UNIVERSITY**



The mission of the **Center for Reliable Information Systems and Cyber Security (RISCS) at Boston University (BU)** is to promote and coordinate research and education in trustworthy, safe, and secure systems and networks by emphasizing a multidisciplinary approach that includes fields as diverse as reliable and secure computations, data science, engineering, economics, ethics, and law.

Through RISCS, BU has been recognized as a Center of Academic Excellence in Cyber Defense since 2004 and in Cyber Defense Research since 2008.

The Center draws on the expertise of 22 faculty and over 100 graduate students from the College of Arts and Sciences, the College of Engineering, Questrom School of Business, and Metropolitan College, and provides opportunities for faculty and students from diverse fields to collaborate on interdisciplinary research problems, create new knowledge, and

develop innovative multidisciplinary curricula. Current research areas include cryptography, modular approaches to cloud security, data privacy, differential privacy, data science approaches to security, secure multi-party analytics, network and software security, software safety, trustworthy computing, database security, among others.

BU has a comprehensive educational portfolio that ranges from robust undergraduate course offerings to master's programs with cybersecurity specializations in computer science, computer information systems, and engineering and PhD programs in fundamental and applied research. Flexible learning options—online, hybrid, and evening—are available through Metropolitan College. BU's fully online programs in information technology, including the cybersecurity concentration, have been ranked in the top ten online programs for the last five years.

#### **DESIGNATIONS**

- CAE Cyber Defense Education
- CAE Cyber Defense Research

#### **CONTACT INFORMATION**

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bu.edu/riscs





### BRIGHAM YOUNG UNIVERSITY



**Brigham Young University (BYU)** became the first CAE in Utah in 2012. Initially, the program was tied to a cybersecurity emphasis within the Information Technology undergraduate program. Due to a continued surge in interest among faculty and students, a new cybersecurity major started in Fall of 2018.

Additionally, many Master's in Technology students focus on cybersecurity in their classes and required thesis. BYU students are uniquely qualified to serve important cybersecurity needs. BYU focuses on building men and women of character who act ethically in the service of others. BYU has over 30,000 motivated undergraduate students (avg. high school GPA: 3.86; avg. ACT: 29.5) from all 50 states and over 100 countries. Over 65% speak a second language (126 languages are spoken on campus) and nearly 50% have lived outside the U.S.

The cybersecurity major's CAE-CD designation was renewed in 2017 in Systems Security Administration, Digital Forensics, and Network Security Administration. Students have won numerous regional and international Collegiate Cyber Defense Competition (CCDC) competitions and came in 2nd and 3rd at Nationals (2016 and 2017). Graduates now work at Microsoft, Symantec, Raytheon, Bishop Fox, Adobe, the United States Air Force, Sandia National Labs, Idaho National Labs, and other leading institutions. Students in the Cybersecurity Research Lab participate in research and a student Red Team. They help attract female students through the annual Girls Cybersecurity Summer Camp.

Strong support from the College of Engineering and BYU leadership promises a bright and growing future for cybersecurity at BYU in coming years.

#### **DESIGNATIONS**

CAE - Cyber Defense Education

#### **CONTACT INFORMATION**

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## CALHOUN COMMUNITY COLLEGE



The largest of Alabama's two-year community colleges, **Calhoun Community College** is an open-admission, community-based, state-supported, coeducational, comprehensive community college dedicated to providing affordable, high-quality and accessible education to individuals in its four-county service area.

Established in 1947, Calhoun offers a full array of university transfer and career training programs. Academic programs are aligned with those of Alabama's state universities through the STARS program and provide students with a seamless path toward a baccalaureate degree. Technical degrees are designed to serve the area's manufacturing base and include participation in the Alabama FAME (Federation for Advanced Manufacturing Education) Advanced Manufacturing Technician program.

#### **DESIGNATIONS**

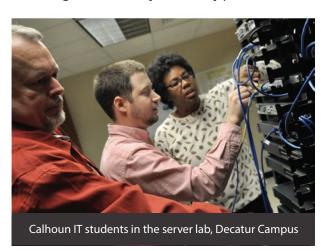
• CAE - Cyber Defense 2-Year Education

#### **CONTACT INFORMATION**

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calhoun.edu/center-for-cybersecurity-education

The Huntsville campus is situated in Cummings Research Park (the nation's second largest research park), in view of the US Space and Rocket Center and near Redstone Arsenal, home to NASA's Marshall Space Flight Center and the Army Aviation and Missile Research Development and Engineering Center (AMRDEC). With a mission that includes support for local economic development, Calhoun was an early leader in building ties to Huntsville's cybersecurity community, and its Computer Information Systems (CIS) department introduced its initial cybersecurity coursework in 2010. It has since developed a cybersecurity degree program and received CAE-2Y recognition in 2018. Calhoun's CIS department also offers degrees in programming and networking, with coursework leading to industry- recognized certifications. Calhoun's **Center** for Cybersecurity Education (CCE) provides information assurance and cyber defense education along with community outreach to promote best practices within and outside our campus to prepare the next generation of cybersecurity professionals.





### CALIFORNIA STATE POLYTECHNIC UNIVERSITY, POMONA



#### California State Polytechnic University, Pomona

**(CPP)** is among the best public universities in the West and is nationally ranked for helping students achieve economic success. As an inclusive polytechnic university, we cultivate success through experiential learning, discovery, and innovation. Our graduates are ready to succeed in the professional world on day one.

Faculty in all disciplines put theory to practice, providing students with opportunities to apply their knowledge in hands-on projects, research collaborations, and valuable internship and service-learning programs.

Since its initial designation as a National Center of Academic Excellence in 2004, the California Center for Cyber Risk (formerly the Center for Information Assurance) has been a leader in cybersecurity education, earning the respect of government officials, industry leaders, and national news media. The university has become a top destination for recruiters seeking talented cybersecurity graduates.

CPP recently launched a **Cyber Security Instructional Research Project (CSIRP)** promoting innovative teaching, research and collaboration.

The first project housed by CSIRP is a student-run security operations center and malware analysis lab funded by Northrop Grumman and led jointly by computer information systems Professor Ron Pike and computer science Professor Mohammad Husain. The cross-disciplinary project involves students from multiple disciplines conducting research, developing skills for the workforce, and training fellow students.

#### **DESIGNATIONS**

• CAE - Cyber Defense Education

#### **CONTACT INFORMATION**

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cybersecurity.sdc.cpp.edu





## CALIFORNIA STATE UNIVERSITY SACRAMENTO



The Department of Computer Science of College of Engineering and Computer Science (ECS) at California State University, Sacramento (Sacramento State) established a Center for Information Assurance and Security (CIAS) in 2005. The mission of the center is to advance knowledge of information assurance and security practices through:

- Education, training, and awareness programs in information assurance and security issues and practices
- Applied research in information assurance and security
- Developing interdisciplinary programs in information assurance and security
- Outreach to assist our community, including community colleges, K-12 schools, industry, and government in information assurance and security issues
- Forming collaborations with other education, research, industry, and government institutions

CIAS has been designated as a National Center of Academic Excellence (CAE) in Information Assurance Education (CAE-IA) since 2007. This designation is jointly sponsored by the National Security Agency (NSA) and Department of Homeland Security (DHS). The designation has to be renewed every five years to ensure the designated institution meets stringent criteria with respect to curriculum, faculty, research, and institution-wide commitment to information assurance practices and education. CIAS has recently been awarded its re-designation as a CAE in Cyber **Defense (CAE-CD)** for the academic years 2017-2022. The CAE designation was one of the key factors for the National Science Foundation (NSF) to award Sacramento State over \$4 million in funding as part of the CyberCorps® Scholarship for Service (SFS) program to support students in computer science or computer engineering to become cybersecurity specialists for the academic years 2010-2020.

#### **DESIGNATIONS**

CAE - Cyber Defense Education

#### **CONTACT INFORMATION**

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ecs.csus.edu/wcm/cias





### CALIFORNIA STATE UNIVERSITY SAN BERNARDINO



#### California State University, San Bernardino

(CSUSB) is forging a cybersecurity pathway for qualified professionals to enter the workforce. Our efforts begin at the K-12 level where we have served over 21,000 participants in our local community through outreach efforts, heavily impacting k-12 by our annual GenCyber camp. Data has shown that we have increased the interest in cybersecurity education and careers by 81% and increased general interest in college by 91%. More than 1000 middle school and high school girls have been served by our camp, with the majority of our participants coming from a minority background.

CSUSB is also leading the Community College Cyber Pilot Program (C3P) addressing the needs of veterans and others at the community college level through a grant from the National Science

#### **DESIGNATIONS**

• CAE - Cyber Defense Education

#### **CONTACT INFORMATION**

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cyber.csusb.edu

Foundation. Modeled after our successful SFS CyberCorps® program, C3P will retool returning students in cyber and promote cybersecurity curriculum at the community college level. CSUSB's SFS program is in the top 3 in the nation regarding the output of new cyber talent for the federal workforce and #1 for diversity with more than 40% female and 48% from minority backgrounds. The innovation and success of the NICE Challenge program, housed at CSUSB, has now prompted the development of a National Cyber Range for all schools across the nation. Currently, more than 300 colleges and universities are using the NICE Challenge project to assist in curriculum development and assessing the in-demand knowledge, skills, and abilities that are needed in today's cyber workforce.

Serving as the leader of the CAE Community and one of 4 National Resource Centers in the country, CSUSB has provided numerous resources and services to hundreds of CAE designated schools while mentoring others through their designation process. By propelling the number of designated CAE schools by more than 100% since 2014, we are able to graduate more cybersecurity professionals moving into the workforce. The CAE program has hosted an annual Virtual Career Fair, where hundreds of students from CAE schools connect with employers across the country for jobs, internships, and research opportunities.

Using our position as a leader in cybersecurity education, our program at CSUSB has been able to heavily impact the national shortage of cybersecurity professionals in the U.S. workforce.



# CAPITOL TECHNOLOGY UNIVERSITY



Capitol Technology University continues to define what it means to be a leader in high-demand technology fields, enabling students to learn, build, and succeed in a practical, hands-on environment. With a commitment to positioning students for jobs immediately upon graduation, Capitol has proven outcomes that attract a high caliber of students, faculty, and community partners.

The university's 52-acre campus, located in Laurel, Maryland, is centered in one of America's most vibrant technology corridors, between Baltimore, MD and Washington, DC.

Cybersecurity programs at Capitol blend scientific theory and application, further strengthened by the university's state-of-the-art labs, including the Center for Cybersecurity Research and Analysis. The Center serves as a learning hub, where individuals – both

students and professionals - can engage in exchange.

From the student-made video game console, to an array of labs in additional key technology areas, a culture of innovation is ingrained into the Capitol experience. Both online and in-class program options are available to enable undergraduate and graduate students to earn a degree on their terms.

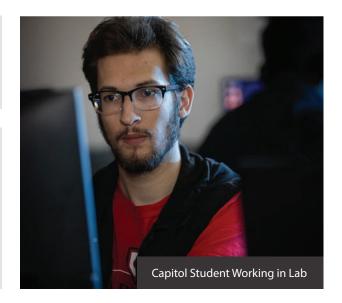
As one of the first schools to be designated a National Center of Academic Excellence in Cyber Defense, Capitol stands ready to advance the field and do its part to combat one of the nation's greatest challenges one student at a time.

#### **DESIGNATIONS**

CAE - Cyber Defense Education

#### **CONTACT INFORMATION**

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Carnegie Mellon University

### CARNEGIE MELLON UNIVERSITY



Carnegie Mellon University (CMU), through the Information Networking Institute (INI) and Carnegie Mellon CyLab, has attained three distinct federal designations as a National Center of Academic Excellence for its merits in Cyber Defense Education (CAE-CDE), Cyber Defense Research (CAE-R) and Cyber Operations (CAE-CO; renewal pending).

CMU is a longstanding leader in cybersecurity education and research. The university invested heavily in hiring cybersecurity faculty prior to 9/11, and later launched CyLab, the university-wide institute that brings together over 300 researchers in security and privacy. In 2003, the INI established one of the nation's first security degrees, the Master of Science in Information Security (MSIS, formerly the M.S. in Information Security Technology and Management) and has since graduated 348 students well-positioned to defend our nation and tackle the

challenges faced by government agencies.

Through its CAE designations, Carnegie Mellon participates in scholarship programs designed to increase and strengthen the cache of cybersecurity professionals that protect the nation's critical infrastructures and national defense. Since 2001, CMU has graduated 211 students through the National Science Foundation (NSF) CyberCorps® Scholarship for Service (SFS) and five students through the Department of Defense Information Assurance Scholarship Program (IASP).

CMU also participates in the multi-university INSuRE (Information Security Research Education) program, which engages students in active research projects under the guidance of government organizations and research labs.

#### **DESIGNATIONS**

- CAE Cyber Defense Education
- CAE Cyber Defense Research

#### **CONTACT INFORMATION**

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# CLARK STATE COMMUNITY COLLEGE



Clark State Community College has offered its CyberSecurity/Information Assurance AAS degree since 2008. The college was designated as a CAE-CD in 2017. Clark State's service area includes Wright Patterson Air Force base and many Department of Defense contractors who employ cybersecurity specialists. The CyberSecurity/IA degree prepares students to meet this labor demand.

The program is managed by two full-time faculty members, Danis J. Heighton and Greg Teets who hold multiple certifications including Microsoft Certified System Engineer, Cisco Certified Network Associate, Cisco CyberOps, CompTIA A+, Network+, and Security+. Clark State partners with Microsoft, Cisco, and CompTIA. Both faculty worked in IT-related positions prior to moving into the

education field. Clark State has received three NSF ATE grants which have focused on developing and supporting cybersecurity program faculty development. The most recent grant focuses on developing hands-on learning labs specifically focused towards facilitating high school teachers who are interested in teaching foundational cybersecurity topics.

#### **DESIGNATIONS**

• CAE - Cyber Defense Education

#### **CONTACT INFORMATION**

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clarkstate.edu





### **CLEMSON UNIVERSITY**



The Duke Energy Electrical Grid Research Innovation and Development center (eGRID) at Clemson can simulate the electrical grid of any country in the world to test how cities would manage cyberattacks to power infrastructure

**Clemson University** continues to develop research infrastructure, educational programs, and faculty expertise in alignment with national security interests in cybersecurity.

With a focus on power systems security and on securing cyber-physical systems, Clemson takes a broad, multidisciplinary approach to cybersecurity research with at least 15 faculty from eight departments and Clemson Computing and Information Technology (CCIT) contributing. Clemson offers unique research equipment and facilities for research related to autonomous vehicles and systems connectivity, electrical grid simulation, cloud computing, social media listening, high-speed computing, and big data analytics. Clemson works closely with federal agencies and the private sector to pursue research projects with real-world impact. In the past five years, Clemson has secured \$27 million

in grant awards for cybersecurity projects and Clemson faculty garnered more than 400 citations in 2017 alone for cybersecurity-related research.

Additionally, Clemson offers a broad range of cybersecurity courses at both the undergraduate and graduate levels, covering topics such as computer security principles, censorship, malware design, and penetration testing. Clemson aims to graduate more students to fill critical workforce needs in the cybersecurity sector and now offers a minor in cybersecurity for undergraduates with multiple paths for students in business, science, and engineering.

The mission of the new Clemson University Cybersecurity Center is to propel Clemson University as a leader in the field of cybersecurity in all aspects, including research, education, industry partnership, and community engagement.

#### **DESIGNATIONS**

- CAE Cyber Defense Research
- CAE Cyber Defense Education

#### **CONTACT INFORMATION**

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clemson.edu/centers-institutes/cybersecurity





# COASTLINE COMMUNITY COLLEGE



Coastline Community College has the honor of being the first California Community College to earn the designation as a Center of Academic Excellence in Cyber Defense (CAE). Located in Orange County, California, Coastline is designated as Hispanic, Asian-American, Native American, and Pacific Islander Serving Institutions and also serves traditional students, active-duty military, and veterans from across the country via onsite/online cybersecurity programs.

The goal of the CAE Cyber Defense Education program at Coastline is to reduce vulnerabilities in our national information infrastructure by promoting higher education and research in cyber defense and producing professionals with cyber defense expertise. Cybersecurity state approved degrees and certificates were developed in collaboration with business and industry partners to provide students

with the knowledge and skills that align with the CAE Knowledge Units and the NICE Framework. Degrees that are offered at Coastline include: Associate Degrees in Computer Networking, Cybersecurity, and Microsoft MCSE. Certificates of Achievement and Certificates of Accomplishment are also offered in Cybersecurity, Cybersecurity Apprenticeship, Cisco CCNA, and CompTia to name a few.

Coastline is also proud to offer students a Registered Cybersecurity Apprenticeship program. This program offers students a series of eight online courses in networking and cybersecurity to prepare them for placement as registered paid apprentices. The program pays for tuition, textbooks, and industry certification exams.

#### **DESIGNATIONS**

- CAE Cyber Defense 2-Year Education
- CAE Regional Resource Center

#### **CONTACT INFORMATION**

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# COLLEGE OF DUPAGE



**College of DuPage (COD)**, Glen Ellyn, IL, serves approximately 27,000 highly diverse, traditional, and non-traditional students each semester on the largest single community college campus outside the state of California. COD has a highly developed infrastructure, deep academic expertise, and significant academic and industry relationships.

As we become increasingly engaged with and reliant on technology in our homes, schools, and workplaces, our vulnerability to malicious cyberattacks and information theft increases.

The Center for Cyber Defense Education at College of DuPage is dedicated to the development, promotion, and support of education, collaboration, and innovation in security technologies and management, information security assurance, and

digital forensics across multiple academic and professional disciplines.

The Cybersecurity and Defense A.A.S. degree at COD provides students with a comprehensive foundation in the principles of cybersecurity and covers a variety of topics, including computers and criminal justice, homeland security, networks, routing and switching, servers and virtualization. The program consists of a minimum of 64 credits in General Education, degree program, and elective requirements. Upon completion of the program, students will be qualified for entry-level employment in a variety of positions in information systems.

#### **DESIGNATIONS**

• CAE - Cyber Defense 2-Year Education

#### **CONTACT INFORMATION**

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cod.edu/programs/cit/cyber\_defense





## COLLEGE OF SOUTHERN NEVADA



Founded in 1971, the **College of Southern Nevada** is the state's largest and most ethnically diverse, higher education institution, with more than 35,000 for-credit students per semester and 12,000 non-credit students per year. The college offers more than 180 degrees and certificates — including 25 available entirely online — in more than 70 areas of study. The college features several nationally or regionally prominent programs in high-demand fields, including cybersecurity. The cybersecurity program is the only one of its kind in Nevada, having the earned the designation National Center of Academic Excellence in Cyber Defense Education Two-Year Education (CAE-2Y). Many students are involved in an active cybersecurity club that regularly participates in National Cyber League competitions. Our students enjoy a robust experience in the program, with access to the latest technology,

including a fully functional Faraday Cage encompassing an entire room. CSN offers its students real-world, hands-on experience before they ever leave the classroom. Our cybersecurity faculty is comprised of experts with experience in business and industry, academia, and law enforcement.

CSN specializes in two-year degrees and workforce development that allow students to prosper. The college also offers seven bachelor's degrees in specialized fields and is the state's largest provider of adult basic education and literacy training. CSN is a Minority Serving Institution and Nevada's first Hispanic Serving Institution. CSN is extremely accessible with three main campuses in Las Vegas, North Las Vegas, and Henderson, each covering 80 acres, as well as sites and centers placed throughout the southern Nevada area.

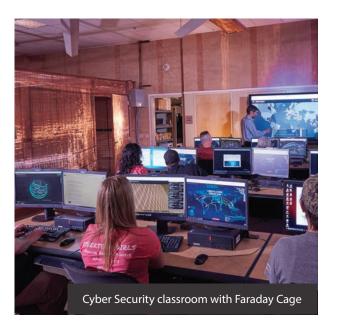
#### **DESIGNATIONS**

• CAE - Cyber Defense 2-Year Education

#### **CONTACT INFORMATION**

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# COLORADO SCHOOL OF MINES



**Colorado School of Mines (Mines)** is a globally known public university devoted to the education and research in engineering and science to solve the world's significant challenges related to the earth, energy, and environment. It is accredited through the doctoral degree by the Higher Learning Commission of North Central Association.

The mission of the Center for Cyber Security and Privacy (CCSP) is to support and promote cybersecurity and privacy education and research at the Colorado School of Mines and the region. CCSP is hosted in the Computer Science Department at Mines, which offers B.S., M.S., and PhD degree programs in Computer Science. CCSP fulfills its mission by leveraging the unique strengths of Mines in engineering and applied science education and research, promoting high-quality and high-impact cybersecurity and privacy research, bolstering

cybersecurity and privacy education and training, fostering cross discipline and cross-institution collaboration, knowledge sharing, and resource sharing, and engaging the local communities and the region.

The education and research activities at CCSP are closely aligned with the Federal Cybersecurity R&D Strategic Plan, and with the National Centers of Academic Excellence in Cyber Defense Education (CAE-CDE) program requirements. The National Security Agency (NSA) and the Department of Homeland Security (DHS) have designated the Colorado School of Mines as a CAE-CDE institution through academic year 2021. Mines undergraduate and graduate students who complete our Cyber Defense Education requirements will receive an official Cyber Defense Education Certificate authorized by NSA and DHS.

#### **DESIGNATIONS**

• CAE - Cyber Defense Education

#### CONTACT INFORMATION

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### COLORADO STATE UNIVERSITY-PUEBLO



The Center for Cyber Security Education and Research (CCSER) at Colorado State University Pueblo

(CSU-Pueblo) has been designated as a Center of Academic Excellence in Cyber Defense Education since 2016. Mission objectives of CCSER include, but are not limited to providing educational outreach programs in cybersecurity to K-12 students, and all interested parties, institutions, and organizations in the wider Colorado area; producing a growing number of students and professionals with expertise in cyber defense that will contribute to the advancement of the field; providing collaboration opportunities among students, faculty, and public and private institutions committed to excellence in the areas of cybersecurity and information assurance; and seeking, encouraging, and developing alliances with other CSU-P departments and CAEs, as well as educational institutions and industry in order to pursue joint educational, research, and grant opportunities.

The CCSER is a technically oriented program within the Computer Information Systems (CIS) sector of the Hasan School of Business. CCSER emphasizes threat vulnerability analysis, cyber threats, system vulnerabilities, network traffic analysis, cyber defense, network administration, and computer forensics in addition to areas of study in block-chain technology and cybersecurity risk strategies.

The CCSER encourages all interested students to compete in the National Cyber League (NCL) cyber competition. Our CSU-Pueblo "CyberWolves" team has been ranked among the top 10 NCL teams in the nation during the last 2 years. Additionally, the CCSER has engaged several local area high schools students and teachers to compete in the NCL, which has created much excitement and interest in the fields of information technology and cybersecurity among high school students.

#### **DESIGNATIONS**

CAE - Cyber Defense Education

#### **CONTACT INFORMATION**

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csupueblo.edu/hasan-school-of-business/ccser





### COLUMBIA BASIN COLLEGE





Columbia Basin College, Computer Science (CS)
Department, was designated as a National Center of
Academic Excellence in Cyber Defense Two-Year
Education (CAE-2Y) in 2017. This designation is given
to schools that have proven a commitment to
excellence in the field of Information Assurance and
Cyber Defense Education. We are one of a few
community colleges in Washington State with this
designation. The Computer Science Department is
committed to providing students and the community
with the training, academic studies, and valuable
hands-on experience necessary for employment in the
Information Technology industry.

The Computer Science department offers Bachelor of Applied Science (BAS) degrees in Cybersecurity and Information Technology. The majority of the students pursuing Computer Science A.A.S. degrees transfer into our B.A.S. degrees. We accept A.A. and A.A.S.

degrees from other colleges into our Cybersecurity B.A.S. degree and our Information Technology BAS degree. The Computer Science Department provides students with access to cybersecurity practitioners through internships, guest lecturers, and events. The department also partners with many local companies to provide student internships. The Computer Science Department also has a Cyber club that is very active in many competitions.

Students who complete the following two-year Associate in Applied Science (AAS) degrees will receive a letter that contains the designation along with a listing of the CAE Knowledge Units (KU) completed.

- Cybersecurity
- Database Administration
- Information Technology
- Network Administrator

#### **DESIGNATIONS**

CAE - Cyber Defense 2-Year Education

#### **CONTACT INFORMATION**

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columbiabasin.edu/computerscience





# COMMUNITY COLLEGE OF RHODE ISLAND



The National Security Agency and the Department of Homeland Security have designated the **Community College of Rhode Island** as a National Center of Academic Excellence in Cyber Defense Two-Year Education (CAE-2Y) through academic year 2023. CCRI, the largest public, two-year, degree-granting college in New England, provides a variety of career, technical, and academic programs at four main campuses in Warwick, Lincoln, Providence, and Newport as well as online and at the Westerly Education Center. CCRI's cybersecurity program is designed to provide students with a strong foundation in the principles and methods of cybersecurity, as well as the fundamental knowledge and tools for applying security measures across a variety of network architectures and settings.

In addition to providing the groundwork for pursuing a bachelor's degree in cybersecurity, this associate

degree program provides the educational background and hands-on training necessary to prepare students for entry in the cybersecurity sector and meets NSA and Centers of Academic Excellence core foundational content and standards.

At the core of the associate degree program is the cyber defense path, composed of the critical networking and cybersecurity-based classes that are the courses used in the KU mapping for this designation. The courses include Programming Concepts, Introduction to Computer Ethics, Introduction to Cybersecurity, Database Design and Management, Networking Technology, Intermediate Networking, and Network Security Hardware. Students who complete these core courses are awarded a certificate of completion that recognizes that they have completed the cyber defense path as part of the cybersecurity curriculum at CCRI.

#### **DESIGNATIONS**

• CAE - Cyber Defense 2-Year Education

#### **CONTACT INFORMATION**

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ccri.edu/comp/cybersecurity





### COUNTY COLLEGE OF MORRIS



The **County College of Morris (CCM)** has been a local and national leader in information security education for over two decades. Since 2003, we have been a certifying institution for the NSA's NSTISSI-4011 National Training Standard for Information Systems Security (INFOSEC) Professionals.

In January 2017 CCM became designated as a National Center of Academic Excellence in Cyber Defense Two-Year Education (CAE-2Y). CCM is the first and only community college in New Jersey to receive this designation. There are a limited number of two-year schools in the country that have achieved this national recognition.

Our faculty is recognized nationally as expert educators, and has been leaders in setting the

direction of our nation's information security curriculum.

The goal of the CCM Center for Cybersecurity is to further the mission of educating our future cybersecurity professionals, increasing awareness for students in other disciplines, and in preparing our greater community to be better cyber citizens.

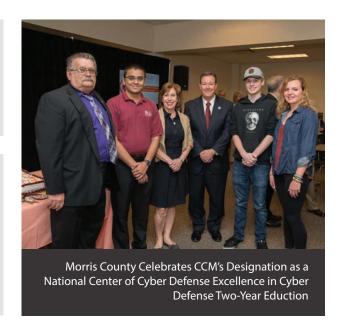
#### **DESIGNATIONS**

• CAE - Cyber Defense 2-Year Education

#### **CONTACT INFORMATION**

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www.ccm.edu





# **CYPRESS COLLEGE**



The **Cybersecurity Center at Cypress College** has been designated as an NSA/DHS Center of Academic Excellence for 2-year college (CAE2Y) since 2018. Our mission is to advance cybersecurity education by providing curriculum, resources, support, and collaboration to develop and implement effective pathways to grow the cybersecurity profession. We offer cybersecurity and cyber defense certificate programs and an Associate of Science in Cyber Defense. After completion of our program, students are prepared to obtain industry-recognized certificates.

Our Center is involved in the Pathway to Advancement of Cybersecurity Education (PACE) program funded by Small Workforce Program (SWP) and National Science Foundation (NSF). PACE's goal is to develop and implement pathways from middle school through 4-year college degree

#### **DESIGNATIONS**

CAE – Cyber Defense 2-Year Education

#### **CONTACT INFORMATION**

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cypresscollege.edu

programs while creating multiple opportunities for employment exit points. Specific goals include:

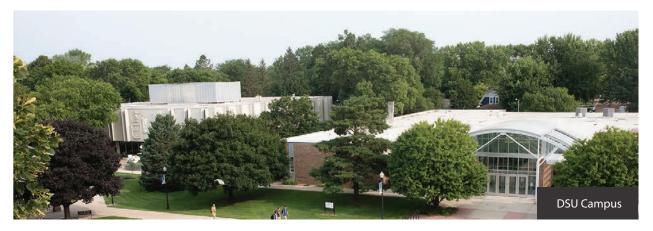
- Embed cybersecurity content in middle school (MS)/ high school (HS) curricula
- Provide outreach to generate interest in cybersecurity
- Offer cybersecurity dual-enrollment courses to MS/HS students
- Provide articulation and alignment with 4-year institutions
- Recommend best practices and disseminate PACE results

As a result of our efforts, during the 2018-2019 academic year 306 MS/HS students completed our cybersecurity courses, 127 MS/HS students obtained CompTIA and/or Cisco industry certificates, and 37 MS/HS students completed one of our college cybersecurity certificate programs (12 to 24 units). Additionally, 1770 MS/HS students participated in our CyberPatriot training/Competition events. CyberPatriot is our outreach program where our college student mentors provide weekly after-school training at six different middle and high schools in the community.





### DAKOTA STATE UNIVERSITY



Since 2004, **Dakota State University (DSU)** has been a proud, contributing member of the CAE Community and is one of a select few institutions that hold all three CAE designations. Over the years, DSU has been very involved in cybersecurity education at all levels ranging from K-12 to teachers and all age groups in between. The University offers an array of relevant programs to the CAE community through the Beacom College of Computer and Cyber Sciences.

Enrollment growth over the past five years in the undergraduate programs has been astounding: Cyber Operations – 177% increase to 464 students. Network and Security Administration – 75% increase to 147 students. Computer Science – 62% increase to 349 students. The graduate programs have also seen significant growth. The student population as

of Fall 2018 stands as follows: MS in Cyber Defense – 37; MS in Computer Science – 47; PhD in Cyber Operations – 49

DSU was one of the first four institutions to be designated as a CAE-Cyber Operations in 2012. They were an early adopter of the CyberCorps® scholarship program and currently have 34 active scholars, enjoy a 100% job placement, and a total of 86 students have been funded.

A national leader in GenCyber, the university has had nearly 2000 participants in five years of camps. They boast the largest residential camp in the nation and have provided camps in North Dakota and Hawaii. The camps cover the full array of age and gender groups: middle school girls camp, rising high school camps, secondary teacher camps.

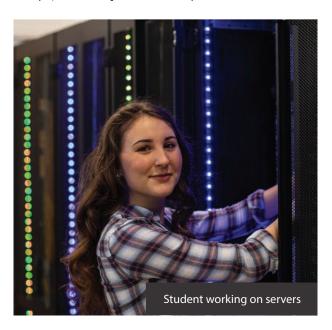
#### **DESIGNATIONS**

- CAE Cyber Defense Education
- CAE Cyber Defense Research
- CAE Cyber Operations

#### **CONTACT INFORMATION**

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CAE-CO - Dr Mike Ham (605) 256-5661; Michael.ham@dsu.edu





### DANVILLE COMMUNITY COLLEGE



Danville Community College (DCC) is located in the most southern part of Virginia providing training to a very rural, agriculturally based, service region. DCC is designated as a National Center of Academic Excellence in Cyber Defense Two-Year Education (CAE-2Y). DCC's cybersecurity programs provide curriculums that are mapped to the Centers of Academic Excellence (CAE) standard. These programs also provide students with the opportunity to take coursework both online and in traditional classroom based settings, meeting the diverse needs of our students in this service region as well as local community.

Since DCC's service region is considered rural, obtaining the CAE-2Y designation has provided our students with access to training that would otherwise not be available to them. As an added benefit, DCC's

Cybersecurity and Cybercrime Investigation
Certificate programs are transferrable to many
four-year institutions and provides cybersecurity
skills needed for companies like Microsoft, CISCO,
and Perspecta that have job opportunities in our area
along with local banks and IT support industries. This
has been a positive factor in other industries to
consider this area for their corporate needs.

The opportunities that DCC offers to our students include participating in a variety of events such as cyber competitions and extra-curricular activities and membership in the DCC Cyber Knights Club. These students have also benefitted from the experience of traveling to these competitions as well as various field trips to local IT facilities to explore the opportunities available to them from completing the various cyber programs we offer.

#### **DESIGNATIONS**

• CAE - Cyber Defense 2-Year Education

#### **CONTACT INFORMATION**

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Danville.edu/CyberCenter





### **DAVENPORT UNIVERSITY**



Davenport University, a private, nonprofit institution located in Michigan, offers a practical and career-oriented curriculum that leads to associate, bachelor's, and master's degrees through a network of campuses located throughout the state of Michigan and online. Founded in 1866 in Grand Rapids, Michigan, Davenport University offers more than 50 fields of study in the Arts and Sciences, Business, Technology, Healthcare, and Urban Education. DU is accredited by the Higher Learning Commission – North Central Association of Colleges and Schools.

Since first achieving CAE status in 2011, the College of Technology established and maintains an actively growing Information Security and Assurance Center known as ISaAC. ISaAC is a hub for up-to-date security-related information including current news

and research, faculty biographies, undergraduate and graduate program information, internship and job postings, and security resources.

To complement the Information Assurance program, the College of Technology developed a bachelor's program in Digital Forensics. Students in this program are immersed in hands-on activities ranging from conducting investigations to analyzing intrusions on mobile devices, personal computers, storage devices, and networks. The Digital Forensics program was designated a Center of Academic Excellence in Digital Forensics (CDFAE) by the DoD Cyber Crime Center (DC3) in 2015.

#### **DESIGNATIONS**

• CAE - Cyber Defense Education

#### CONTACT INFORMATION

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### **DEPAUL UNIVERSITY**



**DePaul University** is the largest Catholic university in the United States and the largest private, nonprofit university in the Midwest, with nearly 22,500 students. Our tradition of providing a quality education to students from many different ethnic, religious, and geographic backgrounds, with particular attention to first-generation students, has resulted in one of the nation's most diverse student bodies. DePaul offers over 300 academic and professional programs for undergraduate and graduate students. Here, our students gain hands-on experience through internships, service, and learning opportunities across Chicago.

The College of Computing and Digital Media houses the School of Computing, which features technical degrees in computing, cybersecurity, health informatics, information systems, and data science. Students in the BS and MS Cybersecurity programs learn how to design, implement, and maintain systems designed to support security policy and networking architecture consistent with mitigating risk and preventing attacks. The program curriculum is developed in cooperation with an industry advisor board—leaders in business who meet regularly with our faculty to ensure students are getting the skills employers are looking for. Extensive labs, accessible locally and remotely, provide a great infrastructure to support a hands-on education.

Our campus is located in the heart of Chicago's business district and we offer a robust array of online courses as well. Students have access to 100 percent of their program's lectures captured and available online. The MS in Cybersecurity can be completed entirely online.

#### **DESIGNATIONS**

CAE-Cyber Defense Education

#### **CONTACT INFORMATION**

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cdm.depaul.edu





### EAST COAST POLYTECHNIC INSTITUTE AND UNIVERSITY



Since 1966, **East Coast Polytechnic Institute and University (ECPI University)** has been dedicated to providing students with education that leads to careers through a hands-on, accelerated learning environment. Smaller class sizes, dedicated faculty and career service representatives, flexible scheduling options, and a military friendly atmosphere are just some of the unique aspects that set us apart. As a designated Center of Academic Excellence in Cyber Defense Education, ECPI University is proud to meet the stringent guidelines for our expertise in cybersecurity education and are committed to preparing students for careers that protect our nation's digital landscape.

Through our year round Cybersecurity program, students undergo an applications-based curriculum and gain knowledge and skills in cybersecurity policy, practices, and procedures where they could graduate with a bachelor's degree in as little as 2.5 years. We recognize the importance of cybersecurity and keeping our curriculum current. In turn, we are constantly updating programs and facilities to provide students with an enhanced education that mirrors real-world scenarios. ECPI University delivers a valuable and quality driven educational experience that is tailored to those who require flexibility in their busy schedules. ECPI University's Cybersecurity program has provided a path to support students, alumni, and military personnel who are looking to expand their technical skillset with a challenging and rewarding career in cybersecurity.

Through quality education, hands-on training, post-graduation support, and career services, we are committed to helping our students and alumni achieve their career goals in this exciting field.

#### **DESIGNATIONS**

• CAE - Cyber Defense Education

#### **CONTACT INFORMATION**

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### EASTERN MICHIGAN UNIVERSITY



The Information Assurance and Cyber Defense program at **Eastern Michigan University** places emphasis on design, integration, administration, hardening, and protection of all types of computer information systems and network infrastructures in cyber environments.

Our mission is to support the computing and cybersecurity needs of local, regional, and national government and private organization through excellence in education, scholarship, and service. We are committed to providing quality educational opportunities to both traditional and non- traditional students and seek to equip our students with the knowledge and skillset necessary for future computing and cybersecurity professionals to build, maintain, and protect networks and computer systems in both government and industry.

Our students are immersed in solid theories as well as intensive hands-on practical experiences to enhance their critical thinking and problem-solving capabilities applied to all elements in modern computing disciplines.

#### Our curriculum covers:

- Computing and networking theories/practices
- System architecture and administration, integration, and troubleshooting
- Cybersecurity threat/risk evaluation
- Incident response analysis and practice
- Network/digital forensics and investigation
- Penetration testing and system auditing
- Cyber laws, legislation, policy/compliance, and project management

#### **DESIGNATIONS**

• CAE - Cyber Defense Education

#### **CONTACT INFORMATION**

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emich.edu/cot/isac/programs/ia





### EASTERN NEW MEXICO UNIVERSITY RUIDOSO BRANCH COMMUNITY COLLEGE



Eastern New Mexico University – Ruidoso Branch Community College (ENMU-Ruidoso) currently serves as a Title V institution for Hispanics, has a strong dual credit program with nineteen high school students enrolled in cybersecurity certificate program for the Mescalero Apache Tribe, Mescalero High School, and is planning to expand to the local high schools in Lincoln County, New Mexico.

The A.A.S. in Information Systems (IS) Cybersecurity is designed to introduce students to contemporary information systems security and information assurance and to demonstrate how these systems are used throughout global organizations. The focus of this program will be on the key components of information systems assurance and cybersecurity; people, software, hardware, data, security, and communication technologies, and how these components can be integrated and managed to

create competitive advantage. The National Security Agency and the Department of Homeland Security have designated ENMU-Ruidoso as a National Center of Academic Excellence in Cyber Defense Two-Year Education (CAE-2Y). This program is specifically designed to prepare students in the National Initiative in Cybersecurity Education (NICE) framework for Operate and Maintain and Protect and Defend, and provide current information systems professionals with an Information Systems Security certificate to meet the needs of current and future employer requirements.

The program maps to a Cybersecurity Technician job position based on NICE framework. Upon completion of this program, students will receive a university certification of completion, the CompTIA Security+ and EC - Council Certified Ethical Hacker (CEH) $^{\text{TM}}$  industry certification in addition to their degree.

#### **DESIGNATIONS**

• CAE-Cyber Defense Education

#### CONTACT INFORMATION

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ruidoso.enmu.edu/index.php/cyber





### EAST STROUDSBURG UNIVERSITY



**East Stroudsburg University** has been designated a National Center of Academic Excellence in Cyber Defense Education since 2003. The Computer Security program is taught by faculty that are dedicated to cybersecurity and information assurance education, training, research, literacy, and awareness.

In 1999, the East Stroudsburg University (ESU)
Computer Science Department began to develop
our Undergraduate Computer Security program,
offering the first Computer Security course in 2000.
By 2002, ESU offered students a Bachelor of Science
degree in Computer Security, the first such
undergraduate degree in the United States.

Our rigorous baccalaureate program requires courses in introductory computer science,

introductory and advanced cybersecurity, and advanced mathematics. Our students round out their education with coursework designed to foster critical thinking, develop communications skills, and impart an ability to navigate a complex, diverse, and global society.

With small class sizes for courses within the major, ESU is able to provide quality education to the individual student. East Stroudsburg University is proud to play a significant role in developing a strong, capable, and technologically proficient workforce that is equipped to manage and protect our critical cyber infrastructure.

#### **DESIGNATIONS**

• CAE-Cyber Defense Education

#### **CONTACT INFORMATION**

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quantum.esu.edu/compusec





### EMBRY-RIDDLE AERONAUTICAL UNIVERSITY - DAYTONA BEACH



As the world's oldest, largest, and most prestigious university specializing in aviation and aerospace, research and education in cybersecurity at **Embry-Riddle Aeronautical University (ERAU)** have grown significantly in recent years, particularly in the area of aviation-related cybersecurity. ERAU – Daytona Beach campus was designated in 2016 as a National Center of Academic Excellence (CAE) in Cyber Defense Education, carrying also a Secure Software Development focus, the only institution in the State of Florida to have this specialized designation.

The Cybersecurity and Assured Systems Engineering (CyBASE) Center at ERAU – Daytona Beach campus performs research in cybersecurity associated with critical infrastructures and assured systems, such as aviation and aerospace systems. CyBASE projects are carried out in the Cybersecurity Engineering Lab

**DESIGNATIONS** 

• CAE - Cyber Defense Education

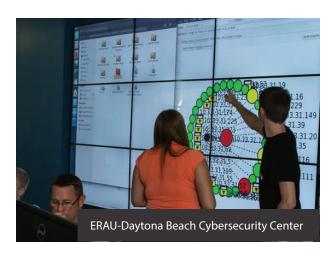
#### CONTACT INFORMATION

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daytonabeach.erau.edu/about/labs/cybase

(CybEL) and the Avionics Cybersecurity Lab depending on the needs of specific projects. Furnished with state-of-the-art hardware and software to permit involvement in cybersecurity attack and defend exercises, the CvbEL facility is isolated from the outside world. Designed to meet instructional and research needs in the area of cybersecurity, CybEL also includes a visualization infrastructure to apply techniques and display information to cyber-attack related data. The Avionics Cybersecurity Lab employs experienced faculty and students motivated to performing research on a broad range of topics that focus on the design, development, and implementation of techniques and tools for cybersecurity assessment and protection of avionics systems and airborne systems.

ERAU – Daytona Beach offers a Cybersecurity
Engineering Area of Concentration within the
Bachelor of Science in Computer Science, a
Cybersecurity Engineering Minor, and the Master of
Science in Cybersecurity Engineering.





### ESTRELLA MOUNTAIN COMMUNITY COLLEGE



**Estrella Mountain Community College (EMCC)** was designated a CAE-2Y institution in 2014. This Hispanic Serving Institution offers the Information Technology Security Certificate as well as the Information Technology and Power Systems Security Associate of Applied Science (A.A.S) degree.

This program is uniquely positioned to help combat the shortage of highly trained cybersecurity technicians. The program teaches students essential cybersecurity concepts and allows them to specialize in an area. Students are able to select from one or more of the following specializations: Network Security, Linux Systems Security, Microsoft Systems Security, and Power Systems Security. The Power Systems specialization focuses exclusively on the power and energy sector and has been described as a one-of-a-kind by various industry representatives.

EMCC's cybersecurity curriculum was developed through a close working relationship with an industry advisory board that is composed of representatives from the public and private sectors. Furthermore, the curriculum went through a rigorous vetting during the spring of 2017 by local cybersecurity industry members. The relationships and information gleaned from the vetting process has been used to improve EMCC's curriculum and to help guide students towards internships and/or employment.

As students' progress through the program, their coursework will provide them the required skills necessary to make them sought after job candidates. Additionally, the curriculum prepares them for the rigors of IT security industry certification exams.

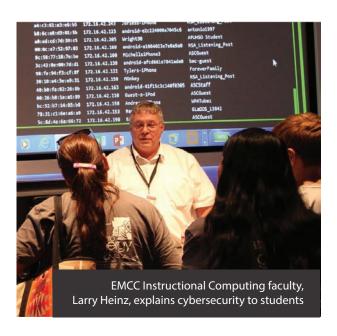
#### **DESIGNATIONS**

• CAE-Cyber Defense 2-Year Education

#### CONTACT INFORMATION

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### EXCELSIOR



Founded in 1971, **Excelsior College** is a regionally accredited, not-for-profit, distance learning institution that focuses on providing educational opportunity to adult learners. The College contributes to the development of a diverse, educated society by valuing lifelong learning with an emphasis on serving individuals who are historically underrepresented by higher education. Excelsior meets students where they are academically and geographically by removing obstacles to the educational goals of adult learners through affordable access to quality instruction and the assessment of learning.

Excelsior College is designated by the National Security Agency and Department of Homeland Security as a National Center of Academic Excellence in Cyber Defense Education. Its career-aligned cybersecurity curriculum expands across several online programs at the undergraduate and graduate

**DESIGNATIONS** 

• CAE-Cyber Defense Education

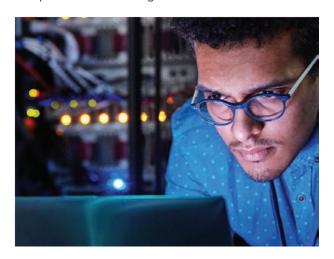
#### **CONTACT INFORMATION**

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nationalcybersecurityinstitute.org

levels. Excelsior's programs and experienced faculty prepare students for advancements in such areas as cyber operations, cybersecurity management, cybersecurity technology, and nuclear cybersecurity. Undergraduate and graduate level courses prepare students for industry certification exams, including the Security+ certification, in addition to contributing to a rich program experience.

The National Cybersecurity Institute (NCI) at Excelsior College is a center for cyber defense education dedicated to assisting government, industry, military, and academic sectors meet challenges in cybersecurity policy, technology, and education. In addition, NCI targets the development of effective cybersecurity practice in specific sectors, including health care, finance, utilities, energy, telecommunications, education and training. NCI sponsors Excelsior students to participate annually in cyber competitions. Excelsior was awarded the 2018 GenCyber NSA/NSF Grant to host a cybersecurity camp for middle and high school educators.





# FAIRLEIGH DICKINSON UNIVERSITY



Fairleigh Dickinson University (FDU) is a National Center of Academic Excellence dedicated to the preparation of world citizens through global education. The University strives to provide students with the multi- disciplinary, intercultural, and ethical understandings necessary to participate, lead, and prosper in the global marketplace of ideas, commerce, and culture. Founded in 1942 by Dr. Peter Sammartino and his wife, Sylvia (Sally), Fairleigh Dickinson University has grown into the largest private university in New Jersey. Today, more than 11,500 students from 32 states and 72 countries are enrolled on the University's two campuses in northern New Jersey and its international campuses in Wroxton, England and Vancouver, Canada.

FDU offers multiple undergraduate and graduate degrees and certificate programs in cybersecurity and information assurance related disciplines

through its four colleges and schools on three campuses. It has been offering degree programs in Computer Science since 1975 and concentrations in Cybersecurity since 2010. The undergraduate Information Technology program started in 2004 and began offering a concentration in Security and Forensics in 2015.

FDU Center for Cybersecurity and Information Assurance was established in 2012 paving the way for FDU's CAE-IAE and CAE-CDE designations in 2013 and 2015, respectively. Our CAE designation has resulted in a steady growth of student enrollment, engagement of faculty in course development, and thriving student research experiences through NSA grant funding. Ongoing faculty research on hardware, IoT, and smart grid security is further strengthening the training of high quality and skilled cyber defenders for our country.

#### **DESIGNATIONS**

• CAE-Cyber Defense Education

#### **CONTACT INFORMATION**

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www.fdu.edu





### FAYETTEVILLE TECHNICAL COMMUNITY COLLEGE



#### Fayetteville Technical Community College (FTCC)

is well positioned to respond to the regional demand for skilled cybersecurity workers. The college, which began serving students since 1961, currently offers 283 degree and certificate programs of study to over 4500 full-time and 7000 part-time students, as well as a wide variety of non-credit, continuing education courses to nearly 17,500 students annually.

FTCC offers a comprehensive and rigorous Information Assurance and Cybersecurity program. In 2018, the school was designated as a National Center of Academic Excellence in Cyber Defense Education (CAE-2Y) by the National Security Agency and the Department of Homeland Security. The Systems Security & Analysis program prepares students for jobs in IT security such as computer network defense analysts, infrastructure support,

and intrusion detection system (IDS) technicians. Additionally, FTCC is part of the National Center Initiative for Cybersecurity Careers and Studies, National CyberWatch Center, National Cyber Security Alliance, and the Fayetteville/Ft Bragg ISSA Chapter. Fayetteville Technical Community College also has multiple industry partners that currently include Cisco, CompTIA, EC-Council, Microsoft, NDG, Palo Alto, RedHat, SAS, and VMWare.

Currently, FTCC offers an Associate Degree in Systems Security & Analysis along with certificate options in cybercrime, network defense, and Linux.

Geographically, FTCC is located in a region with intense cybersecurity research activity, situated in close proximity to Fort Bragg, Camp Lejeune, and the Research Triangle Park (RTP) area.

#### **DESIGNATIONS**

• CAE-Cyber Defense 2-Year Education

#### **CONTACT INFORMATION**

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www.faytechcc.edu





## FERRIS STATE UNIVERSITY



The Information Security & Intelligence (ISI)

program started in the Fall 2007. The ISI program was created from the ground up rather than a modification to an existing program. The ISI program was developed in consultation with several corporate and government agencies after a 2006 brainstorming session in Washington, DC. The ISI program continues to be a leader in the cybersecurity field in that it has encompassed cybersecurity and data analytics since its inception, which is a combination that is just recently gaining attention. The ISI program includes a Bachelor of Science with concentrations in Digital Forensics, Penetration Testing and Secure Software, Data Mining, and Network Security. Additional concentration options include a custom concentration developed with an advisor as well as foreign language options.

#### **DESIGNATIONS**

• CAE - Cyber Defense Education

#### **CONTACT INFORMATION**

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Ferris State University (FSU) is designated as a National Center of Academic Excellence in Cyber Defense and is the first university in the United States to have been designated as a Department of Defense/Air Force Cyber Command Center of Digital Forensic Academic Excellence.

The ISI programs are highly ranked by many national organizations and are the premier cybersecurity degrees in the State of Michigan. Each ISI faculty member has more than 10 years of in-field work experience, as well as average of four industry certifications. Collectively, the faculty have published numerous journal articles and books. Further demonstration of research activity includes funding by the National Science Foundation, National Security Agency, Department of Defense. Faculty credentials include citation in the landmark U.S. Supreme Court case Riley v. California, expert witness qualification in many jurisdictions, Fulbright Scholar, Distinguished Professor, International Educator of the Year, Michigan Professor of the Year, first faculty member designated an EC-Council Certified Security Analyst v9 Instructor, and Michigan Cyber Civilian Corps team lead. The ISI program is proud to have numerous governmental and industry partners that provide our students the ability experience many cutting edge and best-of-breed cybersecurity technologies used in today's enterprises and governmental sectors.





### FLORIDA ATLANTIC UNIVERSITY



Florida Atlantic University's Center for Cryptology and Information Security (CCIS) was established in the fall of 2003 by Spyros Magliveras as a FAU College of Science center with funding provided by a federal earmark. Today it is founded on the unique strengths of cryptology and information security specialists in four different colleges of FAU: the College for Design and Social Inquiry, the College of Business, the College of Engineering and Computer Science, and the College of Science. In July 2016, FAU and the Airforce Research Laboratory, Information Directorate, Rome, New York, US (AFRL/RI) entered into an Education Partnership Agreement for a period of 5 years. Moreover, CCIS established an MoU with the Spanish National Cybersecurity Institute (INCIBE).

Research of the center faculty is funded through various national and international sources and

covers a broad spectrum of topics, including cryptology, cybercrime, cyber forensics, operational cybersecurity, critical infrastructure security, data analytics, internet measurement, secure systems, security from an interdisciplinary perspective, social perspectives of information security, and more.

Center faculty is actively involved in the organization of major scientific conferences, and two managing editors of the Journal of Mathematical Cryptology are with CCIS. FAU is well known for its work in quantum-safe cryptography, including the co-authorship of four semi-finalists in NIST's ongoing standardization effort in post-quantum cryptography, participation in an International Telecommunication Union's study group to develop standards for quantum cryptography, and a 2018 NATO Science for Peace and Security Partnership Prize for a project in the area of post-quantum cryptography.

#### **DESIGNATIONS**

• CAE - Cyber Defense Research

#### CONTACT INFORMATION

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science.fau.edu/cryptology





### FLORIDA A&M UNIVERSITY



At Florida A&M University, we recognize the incessant importance of information security. The Florida A&M University Center for Cyber Security (FCCS) recognizes that as technology advances, the world becomes progressively more challenging. FCCS focuses on education and research and development for all aspects of information security, including systems vulnerability assessment, theory development and formalization methodologies and mobile digital forensics. FCCS is aligned with and supportive of Florida A&M University values and mission which include:

- To promote, coordinate, implement education research and innovation in cyber defense and cybersecurity
- Ensuring participation in FCCS research projects and educational endeavors is open to faculty,

#### **DESIGNATIONS**

• CAE - Cyber Defense Education

#### **CONTACT INFORMATION**

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famu.edu/index.cfm?cybercenter

- visiting scholars, undergraduate, and graduate students including students from diverse disciplines and underrepresented populations
- Promote and value teaching, scholarships, and active learning
- Encourage experimentation, innovation, and creativity and involve graduate and undergraduates in cyber defense and cybersecurity research

FCCS core objectives and purpose include:

- Offer coursework leading to certificates in Cyber Defense and Cybersecurity that align with National Security Agency and Department of Homeland Security standards as defined by the National Centers for Academic Excellence Cyber Defense Program Office
- Increase minority participation in CD and Cybersecurity related careers
- Support university initiatives and projects CD and Cybersecurity
- Establish a program of research in CD and Cybersecurity
- Serve as a community, regional, and national resource for educational institutions, small businesses, and the general population

The activities of the FCCS fall into five major areas which include:

- Research
- Curriculum and standards
- Education and training
- · Service and outreach



# FLORIDA INSTITUTE OF TECHNOLOGY



Florida Tech's Harris Institute for Assured Information (HIAI) was founded in 2009 and serves as the university's focal point for research and education in cyber defense. In 2011, Florida Tech was designated as a DHS/NSA Center of Academic Excellence in Cyber Defense Research and HIAI provides labs and infrastructure for faculty and students engaged in CD-related research.

Florida Tech's support for cyber defense research and education is shown by the president and board of trustees designating cybersecurity as the first of five "Pillars of Excellence" chosen to represent the University's commitment to programs with significant local and national impact.

Research at HIAI includes distributed coordination and command and control for cyber operations,

cyber emulation environments, human-computer interaction and biometric authentication.

Over the past five years, HIAI has been awarded over nine million in research funding and has supported the cyber defense-related research activities of a total of 12 PhD and nine MS students.

Faculty and students at Florida Tech actively participate in research in all six of the core CD areas, as demonstrated by a wide variety of publications, patents, research collaborations, and technology transfer agreements with local and national corporations, government agencies and universities, including DHS, DARPA, DoD, AFRL, Mitre, Harris Corporation, Raytheon/BBN, Notre Dame University, University of Florida, and Worchester Polytechnic Institute.

#### **DESIGNATIONS**

• CAE-Cyber Defense Research

#### **CONTACT INFORMATION**

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### FLORIDA STATE COLLEGE AT JACKSONVILLE



#### Florida State College at Jacksonville's (FSCJ)

Associate in Science (A.S.) in IT Security degree program is for individuals interested in beginning or advancing a career in computer/network security. This hands-on program focuses on digital forensics, intrusion detection, penetration testing, scripting, and networking. The program provides students the skills needed to investigate computer, cyber, and electronic crimes and focuses on digital forensics techniques and procedures, assuring that digital evidence is accurate, complete, and reliable. Students with specific current industry-recognized certifications such as CompTIA's A+, Security+, Microsoft, and Cisco may receive credit for the associated college credit course.

FSCJ Center for Cyber Security works to advance the practice and public awareness of information technology (IT) security through education and service. Our faculty offer guidance to students, members of different academic disciplines across the College, local government, and industry partners.

In 2018, FSCJ hosted a five-day hands-on summer camp for teenage students in Jacksonville interested in cybersecurity. The camp was developed by FSCJ, FBI Jacksonville cyber squad, and Infragard. The students worked with FBI agents during the summer camp and helped them understand the importance of behaving responsibly online. The camp also provided a hands-on, behind-the-scenes access to some of the FBI's work, a SWAT demonstration with special agents in full uniform, remote controlled robots, and life-saving equipment. The camp introduces boys and girls from ages 14 to 17 to the world of cybersecurity. It showed them all the opportunities available for those who want a future in cybercrime fighting.

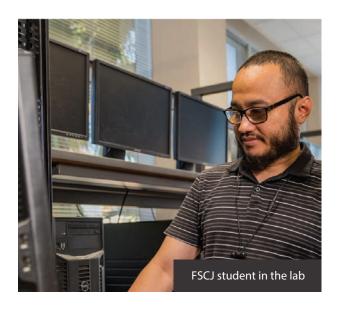
#### **DESIGNATIONS**

CAE – Cyber Defense 2-Year Education

#### **CONTACT INFORMATION**

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fscj.edu/cybersecurity





# FORDHAM UNIVERSITY



With nearly one in five Americans falling victim to a cybercrime, the demand is high for skilled analysts with cutting-edge knowledge of how to detect, prevent, and recover from a cyberattack. Designed for both working professionals and students,

Fordham University's unique, one-year Master of Science Program in Cybersecurity is delivered in the heart of New York City through a combination of weekend, evening, online, and hybrid courses — taught by leading experts in academia and industry. This program offers small classes and close mentorship in recently renovated lab space at both our Bronx and Manhattan campuses.

Using methods in computing and informational science, engineering, and social science, our students learn how to identify solutions to global cyber threats while mastering legal, ethical, and policy issues in this critical field of study. Fordham's core

curriculum is designed to focus exclusively on cybersecurity, which provides students with the depth of knowledge and formal training that is ever more vital to employers across the professional cybersecurity landscape. Our graduates are fully-prepared to help protect commercial networks, critical information infrastructure, and national security information systems; and, can feel confident that their academic program will prepare them to compete successfully for rewarding careers in this growing and lucrative field.

Fordham's Center for Cybersecurity offers an intellectual home for cybersecurity students and faculty, and for the broader Bronx community. This interdisciplinary center brings together diverse members of the Fordham community to promote educational, research, and service projects in the area of information and computer security that benefit our neighbors and fellow New Yorkers.

#### **DESIGNATIONS**

CAE - Cyber Defense Education

#### **CONTACT INFORMATION**

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# FORSYTH TECHNICAL COMMUNITY COLLEGE



Forsyth Technical Community College provides students with guided educational pathways into a competitive workforce for the community and global economy. Forsyth Technical Community College-Davis iTEC Center is the NSA/DHS National Center of Academic Excellence Regional Resource Center for the East Central Region. The mission of Forsyth Technical Community College as a CRRC is to provide resources and assistance to designated schools according to available resources, to provide outreach to potential candidate schools in the assigned region, to expand the CAE-CD program, and to provide assistance to assigned candidate schools for the purposes of program development.

#### **K-12 Cybersecurity Outreach**

The Davis iTEC Cyber Security Center is committed to improving the practice of protecting information

and training individuals in security concepts. The center will seek to establish partnerships, support information security research, assist with development and sharing of resources, and foster partnerships with industry, educational institutions, and professional organizations.

The college will support research efforts in cybersecurity and information security as well as any new cyber initiative. The college will use various methods to develop and distribute resources to facilitate improved cybersecurity and information security. Under its K-12 Cyber Outreach Initiative, Forsyth Tech provides leadership to advance cyber defense education among K-12 students and instructors in the Central Eastern Region.

#### **DESIGNATIONS**

• CAE - Cyber Defense 2-Year Education

#### **CONTACT INFORMATION**

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bit.ly/2VFMjrh





# GEORGE MASON UNIVERSITY



Located near Washington, DC, George Mason **University (GMU)** has grown rapidly over the past half-century and is recognized for its innovation and entrepreneurship, remarkable diversity, and commitment to accessibility. As Virginia's largest public research university, GMU enrolls 37,000 students from 130 countries and all 50 states. GMU's graduates lead all public universities in Virginia with the highest starting salaries, and 80 percent of GMU degree earners are employed within six months of graduation, making GMU rank among the top 100 universities for best value. In 2016, GMU was named a Tier 1 research university, the highest designation from the Carnegie Classification of Institutions of Higher Education. The driving forces behind research at GMU are to solve real-world problems and to serve as an engine of innovation for the region and state. Some of GMU's most notable research includes

developing new techniques and algorithms to secure the cyberspace.

George Mason University is one of the National Security Agency's original seven Centers of Academic Excellence in Information Assurance Education. GMU currently holds the designation of a National Center of Academic Excellence in both Cyber Defense Education and Cyber Research through 2021. The Center for Secure Information Systems was established in 1990 as the first academic center in security at a US university and leads cyber defense research at GMU. GMU's academic programs include a BS in Information Technology, with concentration in Information Security, and a BS in Cyber Security Engineering.

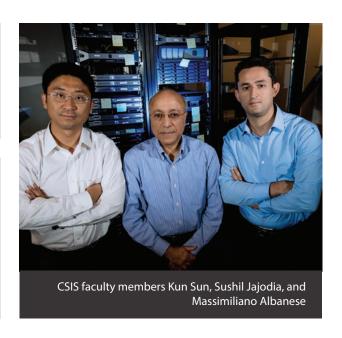
#### **DESIGNATIONS**

- CAE Cyber Defense Education
- CAE Cyber Defense Research

#### CONTACT INFORMATION

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THE GEORGE WASHINGTON UNIVERSITY

## THE GEORGE WASHINGTON UNIVERSITY



One of the most successful feeder institutions into the federal cybersecurity workforce pipeline, educating and sending computer security experts into government service since 2004, is **The George Washington University (GW)**, with its Partnership in Securing Cyberspace through Education and Service (Project PISCES). Through its Cyber Security and Privacy Research Institute (CSPRI), GW is a Center of Academic Excellence in Cyber Defense Research (CAE-R), focusing on research areas in cryptography, secure elections, mobile security, related AI, and social implications of cybersecurity.

GW provides education opportunities for students with diverse backgrounds to become cybersecurity professionals and help protect the safety and security of our nation's information infrastructure. We do this by combining scholarships, community

college student access, university coursework across disciplines, internships, laboratories, and government service. The unifying and reinforcing Signature Seminar uses current practitioners and recognized leaders in cybersecurity to inspire and motivate our CyberCorps® students. It prepares them with the knowledge, perspective, and expertise to perform well in their future government positions, repay their obligation as scholarship recipients, and serve their country. Our multidisciplinary academic program in cybersecurity and our location five blocks from the White House and a few miles from hundreds of government agencies combine to make GW's CyberCorps® program attractive for students and for the government. Our very high placement rate for CyberCorps® graduates reflects that fact, as does our success in recruiting and graduating higher than average numbers of women in the field.

#### **DESIGNATIONS**

• CAE - Cyber Defense Research

#### CONTACT INFORMATION

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## GREEN RIVER COLLEGE



Green River College's AAS-T in IT Systems and Security program prepares students for entry-level employment in a variety of IT positions such as help desk technician, technical support specialist, network technician, and network or computer systems administrator. Students receive foundational training in a broad range of networking, systems administration, and software development, resulting in a well-rounded knowledge of information technology.

Currently, the AAS-T IT program has over 400 students enrolled in classes. During the second year of the program, students are able to choose between a focus on Software Development or Network Administration and Security. Individuals who graduate from the AAS-T program are able to continue their education at Green River College with

a Bachelor of Applied Science Degree in either Network Administration and Security or Software Development.

Students interested in the AAS-T program can complete classes on campus, in the evenings, or fully online. Classes are offered year round with the option for students to start any quarter. Funding is available through generous college foundation scholarships, financial aid, and worker retraining if applicable.

With over 400 AAS-T students, more than 300 BAS students, and 11 full time faculty to help guide them through the learning process, Green River College is excelling at training IT professionals that are prepared to start work immediately after graduation.

#### **DESIGNATIONS**

• CAE - Cyber Defense 2-Year Education

#### **CONTACT INFORMATION**

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greenriver.edu/cybersecurity





# **HAMPTON UNIVERSITY**



The Information Assurance and Cybersecurity
Center at Hampton University (IAC@HU) is a
multidisciplinary center devoted to information
assurance, education, research, and training. The
center provides program and curriculum
development, workshops, multidisciplinary research
opportunities, outreach to other HBCU/MI's and
community colleges, and access to information
assurance and cybersecurity research resources. As
part of the Center, the Information Assurance and
Cybersecurity Lab (IA lab), located in the Computer
Science Department, provides an isolated networked
computer environment suitable for information
assurance and computer security education,
research, and training.

The goals of the IAC@HU include:

Providing students with educational opportunities

#### **DESIGNATIONS**

CAE-Cyber Defense Education

#### **CONTACT INFORMATION**

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iac.science.hamptonu.edu

in information assurance and computer security

- Providing an information assurance and computer security research environment for faculty, staff, and students
- Providing information assurance and computer security resources not only within the University, but also to the local community, including law enforcement, government, business, and the public
- Providing opportunities for enriching information assurance education across the curriculum

The IAC@HU is designated as a National Center of Academic Excellence in Cyber Defense Education (CAE-CDE) by the Department of Homeland Security (DHS) and National Security Agency (NSA) through 2021.

The information assurance and cybersecurity topics are integrated into the undergraduate curriculums offered within the Department of Computer Science: Computer Science (CSC), Computer Information Systems (CIS), and Cybersecurity - Computer Science track (CYS). These curriculums reflect existing advanced technology and provide Hampton University students with knowledge of state-of-theart computer security and information assurance technology. Information assurance and cybersecurity is one of the most important areas in information technology, computing and general high technology areas. All three undergraduate curricular (B.S. in Computer Science, Computer Information Systems and Cyber Security - Computer Science) meet the Center of Academic Excellence in Cyber Defense Education (CAE-CDE). Students completed the CAE-CDE course requirements will receive a certificate of completion.



### HIGHLINE COLLEGE



**Highline College** is proud to be a CAE-CD with two of its programs – Digital Forensics & Investigations AAS and Network Security Engineer AAS mapped to the KUs. Highline was one of the community colleges who originally mapped to the 4011 and 4013e. Once the KUs were established, Highline remapped to those earning a re-designation for six years.

The CIS / Computer Science department has had a networking degree since the late 1990s. By 2003, the department added Network Intrusion Detection along with Data Recovery and Forensics (now known as Digital Forensics). The introduction of the Bachelor of Applied Science in Cybersecurity and Forensics shows the dedication not only of the department but of the institution to the program by becoming the first BAS offered at Highline to be

approved by the WA State Board of Community and Technical Colleges.

The institutional support and that of the IT Staff is further shown in that Highline has hosted the Pacific Rim Collegiate Cyber Competition (PRCCDC) for over a decade. Since 2016, the Highline AAS and BAS students have been a part of the build team for this annual event. They also support and run the International Collegiate Cyber Defense Invitational (ICCDI). Our students also compete in the DoE Cyberforce Competition™ ranking 10th in the November 2018 event.

Highline is the oldest college in King County, WA now in its 57th year. It is also the fifth most diverse college in the United States with over 80 languages spoken here.

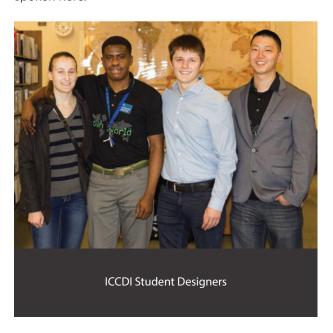
#### **DESIGNATIONS**

• CAE - Cyber Defense 2-Year Education

#### CONTACT INFORMATION

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cis.highline.edu/cae





### HONOLULU **COMMUNITY COLLEGE**



The core cyber defense education program at Honolulu Community College (HCC) is the Computing, Security, and Networking Technology (CSNT) Program. Previously known as the Computing, Security, Electronics, and Technology (CENT) Program, the new name reflects the focus of the program and becomes official starting in the fall of 2019 at HCC.

The CSNT program provides students with extensive hands-on training in information and communication technology. Most courses include a laboratory component where students gain experience configuring and managing physical and/or virtual systems located in the classrooms or the CSNT datacenter. The embedded Certificate of Achievement (CA) in Information Assurance (IA) is built on the Knowledge Unit (KU) requirements for a collegiate institution to be recognized as a CAE-2Y. The program supports industry recognized certifications including A+, LINUX+, Security+, CCNA, and MCP.

The CSNT program also offers third year courses that articulate to the Bachelor of Applied Science in Information Security Assurance at the University of Hawaii at West O'ahu. Non-credit education course offerings at HCC are supported by the Pacific Center for Advanced Technology Training (PCATT). PCATT offers an extensive selection of cybersecurity related courses for industry professionals looking to upgrade their skills or learn new skills. Cybersecurity related courses offered include, Security+, CISSP, CEH, CCNA Security, MCSE, and much more. PCATT also offers customized training to meet the needs of your organization.

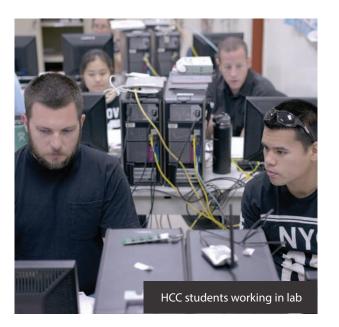
#### **DESIGNATIONS**

CAE - Cyber Defense 2-Year Education

#### CONTACT INFORMATION

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honolulu.hawaii.edu/cybersecurity



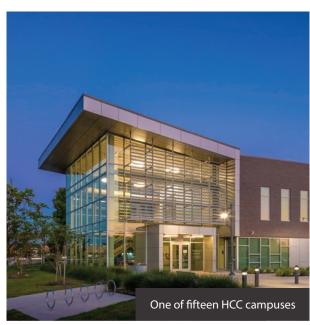


# HOUSTON COMMUNITY COLLEGE



Houston Community College (HCC) is composed of 15 Centers of Excellence and numerous satellite centers that serve the diverse communities in the Greater Houston area by preparing individuals to live and work in an increasingly international and technological society. HCC is one of the country's largest singly accredited, open admission community colleges offering associate degrees, certificates, workforce training, and lifelong learning opportunities.

HCC established a Cybersecurity center under the HCC Digital and Information Technology Center of Excellence. HCC is committed to excellence in Cybersecurity and Cyber Defense education. The Houston Community College Cyber Center's goal is to provide cybersecurity education, information, and awareness to our community.



#### **DESIGNATIONS**

• CAE - Cyber Defense 2-Year Education

#### **CONTACT INFORMATION**

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hccs.edu/cybersecurity





### HOWARD COMMUNITY COLLEGE



Howard Community College (HCC), located in Columbia, Maryland, has been helping students achieve their academic goals since 1970. As a designated National Center of Academic Excellence (CAE-2Y) in Cybersecurity since 2012, HCC is the right choice for a rigorous and nationally-recognized cyber technology education. With the CAE Knowledge Units (KUs) mapped to the associate degree and the certificate program courses, HCC aims to produce a task force capable of defending against the increasingly complex nature of cybercrime and intrusion in both government and industry. The cybersecurity courses are mapped not only to CAE KUs of NSA and DHS, but also to proprietary industry exam certifications such as CompTIA Net+, Security+, CCNA and EC-Council Certified Ethical Hacker (CEH).

Students benefit from industry partnerships and

resources for experiential learning, opportunities for extracurricular and cyber competitions, and the expertise of experienced faculty and practicing professionals.

HCC's Science, Engineering, and Technology Building houses state-of-the-art technology and facilities with hands-on lab instruction. HCC cybersecurity graduates may take advantage of HCC's transfer agreements and continue to 4-year programs or enter the workforce. Possible career paths include entry to intermediate industry positions, such as security specialist, information security specialist, network administrator, and computer forensics investigator.

In addition to the HCC certificate of proficiency and/or A.A. degree, students may request a certificate that is awarded from the division.

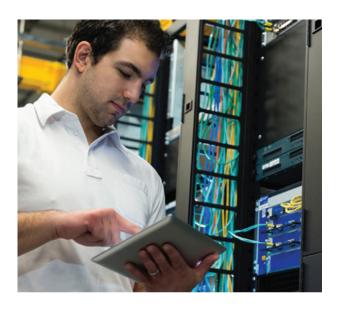
#### **DESIGNATIONS**

CAE - Cyber Defense Education

#### **CONTACT INFORMATION**

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howardcc.edu/cyber





# ILLINOIS INSTITUTE OF TECHNOLOGY



Illinois Institute of Technology (IIT) is world renowned for research and education in engineering, architecture, law, and design, and has now brought this same focused, real-world educational quality to cybersecurity. The only university in Illinois to earn ABET accreditation in information technology (IT), Illinois Tech's Department of Information Technology and Management now offers a Bachelor of Science in cybersecurity and IT in a curriculum designed to be accredited in both areas. The Master of Science in cybersecurity and digital forensics provides expanded opportunities for research, and the professional Masters' in the field is not only available at the Chicago campus but can be completed entirely online. Students, faculty, and practitioners have an opportunity to present research at Illinois Tech's annual ForenSecure, a regional Chicago-area cybersecurity and digital forensics conference now in it's 17th year.

Illinois Tech cybersecurity education and ForenSecure are supported by the Center for Cyber Security and Forensics Education (C2SAFE) and the School of Applied Technology Forensics and Security Laboratory (ForSec Lab). C2SAFE is a collaborative space where business, government, academia, and security professionals intersect. The ForSec Lab hosts live lab facilities with multiple state-of-the-art workstations and is home to the Remotely-Accessible Dynamic Infrastructure for Students to Hack (RADISH) allowing students to have full access to lab resources from any location and from nearly any internet-connected device.

Illinois Institute of Technology offers quality, comprehensive cybersecurity education with significant depth and breadth in one of the world's great cities, opening tremendous opportunities for both students and faculty.

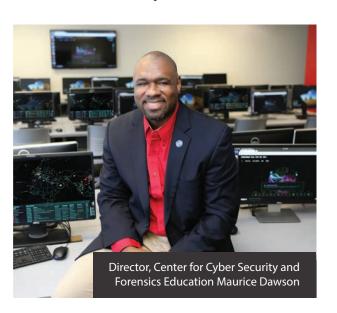
#### **DESIGNATIONS**

CAE – Cyber Defense Education

#### **CONTACT INFORMATION**

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# INDIAN RIVER STATE COLLEGE



The Cyber Center of Excellence (CCoE) at Indian River State College (IRSC) was formed in 2015 and received its Center of Academic Excellence in Cyber Defense designation from the NSA and DHS in 2018. Our core mission is to:

- Deliver instructional excellence to students to help provide the InfoSec workforce with properly prepared cybersecurity professionals
- Strengthen and establish partnerships within the community to provide cybersecurity education and training
- Facilitate cybersecurity related training across all program disciplines
- Continue to develop and expand our visibility throughout our local K-12 educational facilities to enhance cybersecurity education and awareness

IRSC's CCoE brings together nearly a dozen computer science faculty with expertise in ethical hacking, digital forensics, network engineering, data analysis, and programming. By combining cutting-edge labs with exceptional instruction in an engaging environment, our students are prepared to solve real-world security issues. Our industry certification voucher program enables students to achieve certifications from entities such as CompTIA, Microsoft, EC-Council, and Offensive Security at no cost.

#### **DESIGNATIONS**

• CAE - Cyber Defense 2-Year Education

#### **CONTACT INFORMATION**

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irscccoe.org





## INDIANA UNIVERSITY OF PENNSYLVANIA



For almost two decades, Indiana University of Pennsylvania (IUP) has been a leader in cybersecurity education and encouraged the growth of professionals in the field. The B.S. in Computer Science/Cybersecurity track was first offered in 2002. This new degree program combined core computer science and cybersecurity classes with a minor in criminology, creating a novel curriculum that helped students gain a broad understanding of the field and be work-ready. A minor in cybersecurity was also added in 2002 and continues to offer students in all disciplines a better understanding of cybersecurity. IUP is one of the first institutions in the nation to receive designation by the National Security Agency (NSA) as a Center of Academic Excellence and has held this designation for almost two decades. In 2005, IUP founded the Institute for Cybersecurity (ICS) to further

encourage and promote cybersecurity at IUP and the surrounding community.

In the years since its creation, the ICS has established unique and high-quality cybersecurity programs, fostered strong faculty research and teaching expertise, and provided unprecedented cybersecurity learning opportunities, including the annual Cybersecurity Days, weekend workshops and summer camps open to all students and teachers in the local community. Recently, IUP's cybersecurity program has experienced record student enrollment, unprecedented flow of federal awarded grants from DoD and NSA/NSF, and the launch of many novel initiatives (GenCyber, Expansion of CAE-C Education, and DoD CySP) that not only improve our programs but also enhance cybersecurity research and education in the entire western Pennsylvania region.

#### **DESIGNATIONS**

CAE-Cyber Defense Education

#### CONTACT INFORMATION

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iup.edu/cybersecurity



### IOWA STATE UNIVERSITY

## IOWA STATE UNIVERSITY



lowa State University, the land-grant and largest educational institution in lowa, is nationally known for its commitment to the student adventure and finding solutions to tomorrow's challenges

Considered a trailblazer in information assurance education, **lowa State University** in Ames, lowa, boasts a keen eye for delivering programs that enhance its students' marketability in the everchanging world of cybersecurity.

As one of the original seven charter schools honored to become members in the Center of Academic Excellence in Information Assurance Education, Iowa State has developed one of the largest educational and research programs in the nation. Students were attracted to Iowa State more than 20 years ago for a graduate degree in the field and today, the university offers more than a dozen courses in cybersecurity and is poised to offer a new bachelor's degree in cybersecurity engineering in fall, 2019. The Information Assurance Center was created in 2000 and has become nationally recognized for its

multidisciplinary research, teaching and outreach.

The university is also nationally known for its Cyber Defense Competitions that pit the industry's very best against some of the most talented students across the Midwest. More than 6,000 participants have attended the 55 CDCs. More than 1,000 lowa State alumni participated in one or more Cyber Defense Competitions as students, attracting attention from international companies seeking fresh talent with real-world security experience.

The 160-year-old land-grant university has extending education opportunities to middle school and high school students through its creation of security literacy modules for teachers to use in their classrooms.

#### **DESIGNATIONS**

- CAE Cyber Defense Education
- CAE Cyber Defense Research

#### **CONTACT INFORMATION**

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lowa State University pioneered cyber defense learner competitions. Today, students from high schools and colleges from across the nation use university facilities for competitions held five times a year



# IVY TECH COMMUNITY COLLEGE



**Ivy Tech Community College** is the state's largest public postsecondary institution and the nation's largest singly accredited statewide community college system. Ivy Tech has campuses throughout Indiana. It serves as the state's engine of workforce development, offering affordable degree programs and training that are aligned with the needs of its community along with courses and programs that transfer to other colleges and universities in Indiana. It is accredited by the Higher Learning Commission and a member of the North Central Association. Ivy Tech's A.A.S. in Cybersecurity/Information Assurance was designated as a CAE-2Y in 2012 and re-designated again in 2017. Ivy Tech has offered an information security degree since Fall 2008. The program started at the Columbus campus and is now available at all 19 campuses.

To encourage students to engage with the material,

**DESIGNATIONS** 

CAE – Cyber Defense 2-Year Education

**CONTACT INFORMATION** 

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ivytech.edu/cyber-security

students are recruited from local high schools and faculty members sponsor and participate in many events outside the normal academic activities. For example, faculty supports TechFest in Fort Wayne, which focuses on getting high school students interested in STEM careers. Several campuses have hosted CyberPatriot camps over the summer, an event geared to middle and high school students. Ivy Tech hosts an intercollegiate IT competition each year where students from all over the state come to Indianapolis to compete in each of our programs, including cybersecurity. These events help employers see student capabilities and give students a chance to interact with employers.

Additionally, the Ivy Tech Columbus campus has partnered with our military at Muscatatuck to open a Cyber Academy training center. Ivy Tech Fort Wayne has hosted the Collegiate Cyber Defense Indiana Qualifier Competition since 2008, giving students exposure to local and regional industry leaders.







# JACKSON STATE COMMUNITY COLLEGE



Jackson State Community College (JSCC) was the first community college in Tennessee to receive the CAE-2Y designation. JSCC was also the first institution to offer an Associate of Applied Science (AAS) degree in cybersecurity in Tennessee. JSCC was the lead institution in Tennessee to develop a statewide Cyber Defense concentration under the Computer Information Technology A.A.S. degree program. Over the past 15 years, JSCC has offered more than 25 cybersecurity related faculty development workshops for community college faculty across the State of Tennessee as part of the Cyber Security Education Consortium (CSEC). The college has also partnered with the University of Memphis on several projects including the National Science Foundation grant-funded Puzzle-Based Learning Project. The project produced multiple game-like cybersecurity puzzles that were made

available for public access to be used in high school, community college, and university cybersecurity classrooms.

JSCC continues to provide access to cybersecurity resources through its Cyber Security Center website. The JSCC Cyber Security Center provides cyber defense and networking program information, general information about cyber defense/security, links to valuable cybersecurity education and training materials, and provides an avenue to promote collaboration and interaction between students, faculty, and the community. The College partners with several government agencies to strengthen its cybersecurity educational presence in Tennessee. JSCC is always available to assist other community colleges in the development of their cybersecurity programs.

#### **DESIGNATIONS**

• CAE - Cyber Defense 2-Year Education

#### **CONTACT INFORMATION**

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## JAMES MADISON UNIVERSITY



James Madison University (JMU) is one of the original seven Centers of Academic Excellence in Information Assurance Education (now Cyber Defense) (CAE-CD). Since January 1997, JMU has been a leader in online Information Security education. Designed for working professionals, our highly-ranked program is one of the most comprehensive online Information Security Master's degree programs in the country and is part of the College of Integrated Science and Engineering. We are an innovative collection of applied STEM units, focused on connecting students to cutting-edge tools and technology as they focus on real-world problems.

Our Computer Science Department offers an undergraduate Information Security Certificate program. We combine our cybersecurity with co-curricular activities, including hackathons, programming competitions, and the Cyber Defense Club. We have also been active in the Hacking 4 Defense program. JMU also offers a Masters in Business Administration with an Information Security concentration, a Bachelor of Science in Intelligence Analysis and a new online graduate certificate program focusing on Cyber Intelligence. These programs are designed to address a variety of the information security needs of the nation.

Set in the beautiful Shenandoah Valley of Virginia, JMU is a tight-knit community of 22,000 undergraduate and graduate students and 3,000 faculty and staff who come from across the country and around the world. Only two hours from Washington D.C., JMU is fast becoming one of the nation's leading lights in higher education.

#### **DESIGNATIONS**

• CAE - Cyber Defense Education

#### CONTACT INFORMATION

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### JOHN A. LOGAN COLLEGE



John A. Logan College (JALC) is an active and proud member of the CAE community. Our first mission is our students and the community development supported by the school's staff, faculty, administration, and prominent members of our community. We attend CAE events, virtual job fairs, training, and conferences. Our school favors conference experience for our students who have regularly attended 3Cs, WiCyS, and NICE.

John A. Logan College has a CCDC team and computer club, that has competed in CCDC, NCL's, and at Argonne National Laboratories maintaining an average membership of around 20 to 25 students. In 2018, we began a WiCyS women's chapter and presented a poster project with a team of eight at the WiCyS conference in Pittsburgh, PA in March, 2019. Those students elect to put in extra

work, do tutorials, labs, training, and volunteering to community projects every year. If we had to pick one thing about our school that makes us extremely proud, it is our students' involvement in building a more aware and stronger community.

JALC works with K-12 STEM/STEAM programs, Girl Scouts, Boy Scouts, bootcamps, athletes, and parents by utilizing demonstrations and projects. CAE has helped our rural school in Southern Illinois to get on the map. We have gathered resources, made allies, and improved our program through this effort and we proudly share our findings with other schools about our program. JALC is proud to be a member and we hope to continue these progressive steps in building a more secure future with our community and family.

#### **DESIGNATIONS**

• CAE - Cyber Defense 2-Year Education

#### **CONTACT INFORMATION**

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jalc.edu/cia





# JOHNS HOPKINS UNIVERSITY



The Johns Hopkins University Information Security Institute (ISI) is home to world-class interdisciplinary experts whose research is dedicated to protecting the nation's vast online systems, infrastructure, and data.

The institute's signature research area is scientific methods to improve the security of health care devices and systems, from electronic health care records to pacemakers and bedside infusion pumps. JJHUISI faculty members are leading a multi-university team advancing state-of-the-art health care security practices.

ISI researchers understand that secure systems rely on robust cryptographic protocols and are on the forefront of developing new applications that resist attacks.

#### They have:

- Uncovered security vulnerabilities in electronic voting machine software that could have allowed someone to cast multiple votes; most of today's voting machines incorporate paper ballots as a result
- Discovered that hackers could remotely disable the indicator light on MacBook webcams to record and spy on the user
- Exposed a security flaw in Apple's iMessage system that could have allowed hackers to decrypt messages, videos, and photos sent via that service

ISI also is focused on education. More than 100 students are enrolled in its Master of Science in Security Informatics program, which provides them with the technical foundation and knowledge needed to meet the nation's growing demand for highly skilled professionals.

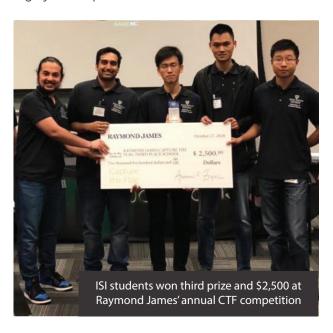
#### **DESIGNATIONS**

- CAE Cyber Defense Research
- CAE Cyber Defense Education

#### CONTACT INFORMATION

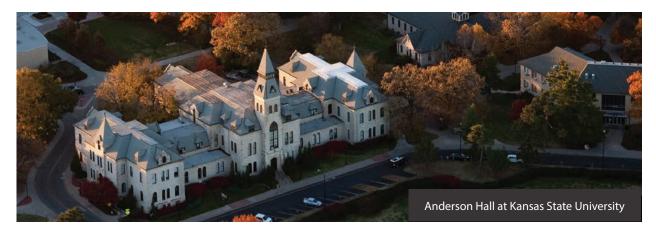
(410) 516-6282 jhuisi-info@jhu.edu

engineering.jhu.edu





## KANSAS STATE UNIVERSITY



The Center for Information and Systems Assurance (CISA) at Kansas State University has been designated as an NSA/DHS National Center of Academic Excellence in Cyber Defense Research since 2010. The mission of CISA is to:

- Conduct fundamental and applied research in information assurance and computer security.
- Advance the knowledge base of our BS, MS, and PhD degree students.
- Engage the professional community in collaborative efforts that support the development, understanding, and operation of safe and secure systems.
- Facilitate security-related collaboration across the university.

CISA supports a broad, cutting-edge cybersecurity

program within the department of computer science. There are eight core computer science faculty whose areas of focus and expertise lie in principles, mechanisms, architectures, assurance, operations, and analysis.

CISA was instrumental in creating the new Cybersecurity option for KSU's undergraduate computer science degree, which provides a structured path to security education as part of a comprehensive computer science curriculum. The option includes a capstone project based on the INSuRE program, which brings together universities and government organizations to solve timely real-world security problems.

#### **DESIGNATIONS**

• CAE - Cyber Defense Research

#### **CONTACT INFORMATION**

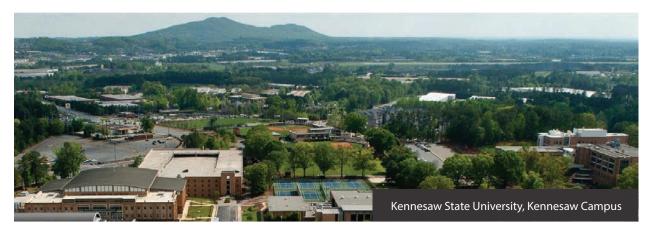
Dr. Eugene Vasserman (785) 532-6350 eyv@ksu.edu

cisa.ksu.edu





# KENNESAW STATE UNIVERSITY



A leader in innovative teaching and learning, **Kennesaw State University** offers more than 150 undergraduate, graduate, and doctoral degrees to more than 35,000 students on two metro Atlanta campuses. A Carnegie-designated doctoral research institution (R2), Kennesaw State is one of the 50 largest public universities in the country. KSU's vibrant campus culture, diverse population, strong global ties, and entrepreneurial spirit draw students from throughout the region and from 92 countries across the globe.

Nationally recognized, internationally renowned, and home to a dedicated community of diverse students and educators, the Michael J. Coles College of Business leverages its passion for innovation to improve the lives of people everywhere. Nearly 20 percent of all KSU students are enrolled in Coles College degree programs.

KSU's Bachelor of Business Administration in Information Security and Assurance (BBA-ISA) creates technologically-proficient, business-savvy information security professionals capable of applying policy, training, and technology solutions to protect information assets from all aspects of threats and to manage the risks associated with modern information usage. In addition to the BBA-ISA, KSU offers an online BS, certificates and minors in ISA and cybersecurity.

Led by renowned textbook authors Dr. Michael Whitman and Dr. Herbert Mattord, KSU's Center for Information Security Education and Institute for Cybersecurity Workforce Development increase interest in cybersecurity education through hosting the annual Conference on Cybersecurity Education, Research and Practice; publishing the Journal of Cybersecurity Education, Research and Practice; and conducting the Southeast Collegiate Cyber Defense Competition.

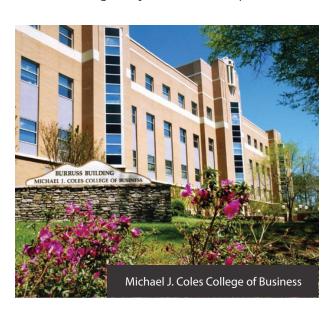
#### **DESIGNATIONS**

CAE – Cyber Defense Education

#### **CONTACT INFORMATION**

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# LAKE SUPERIOR COLLEGE



**Lake Superior College** is the only two-year college in Minnesota designated as a National Center of Academic Excellence in Cyber Defense by the National Security Agency/Department of Homeland Security.

Located in Duluth, Minnesota, it is the largest two-year college in northern Minnesota with enrollment of approximately 10,000 students. It is a member of the Minnesota State system with 30 community and technical colleges and seven state universities.

The college's leadership role in cybersecurity education includes:

- A Network Administration and Cybersecurity
   A.A.S. degree that is available online or on campus
- A national ranking as one of top 25 best online Associate Degrees in Cybersecurity

- A national ranking in the top ten most affordable online Associate Degree in Cybersecurity
- A CyberCorps® Scholarship for Service with St. Cloud State University
- A Minnesota State Pathways transfer agreement with St. Cloud State University that allows LSC students to transfer and complete their bachelor's degree on the SCSU campus
- Free, summer cybersecurity camps that introduce high school students to the world of cybersecurity
- A \$240,000 grant from the NSA for Cybersecurity Workforce Education Initiative built a training lab for students that simulates work environments
- A \$98,938 grant from the U.S. Department of Education is helping train LSC cybersecurity students on the growing security risk offered by IoT (Internet of Things) devices

#### **DESIGNATIONS**

• CAE - Cyber Defense Education

#### **CONTACT INFORMATION**

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Isc.edu





### LAREDO COLLEGE



Laredo College is nestled on the banks of the Rio Grande along the Texas-Mexican border. Founded in 1947, Laredo College is a two-campus district serving the diverse needs of a growing community. The College's Network & Cybersecurity Technology program spearheaded the efforts to achieve CAE-2Y designation in 2018. The Cybersecurity program is diverse and challenging, comprised of Microsoft Server, Cisco, Linux, Forensics, and Cyber Defense curricula. Program topics are dispersed over two stackable certificates culminating in an Associate of Applied Science degree. The program is also a Microsoft and Cisco Academy.

In Spring 2019, the program will launch a Cybersecurity Institute specializing in deep web studies and cyber defense research. The primary goal of the Institute is to produce a high skilled workforce capable of combatting all forms of cyber-attacks. A strictly controlled dark network will include firewalls, VPNs, and the latest in core and access layer cybersecurity technologies. The Institute will introduce and sponsor cybersecurity training programs and workshops to create more effective pedagogies for cybersecurity instruction at both the high school and college level. This highly innovative STEM educational pathway will produce highly skilled individuals who are trained in multiple cyber environments and will be better prepared for direct placement in the workforce.

Also envisioned for 2019 are the expansion of program instruction into UAS drone technology (to explore applications for border and crime scene surveillance), expansion into cyber operations, and creation of Enhanced Skills Certificates. All program enhancements are intended to better prepare program graduates and the community for successful workforce employment in cyber defense occupations.

#### **DESIGNATIONS**

• CAE - Cyber Defense 2-Year Education

#### CONTACT INFORMATION

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laredo.edu/cms/CenterForCyberEducation





### LEEWARD COMMUNITY COLLEGE



**Leeward Community College's** Cybersecurity Center showcases a variety of cybersecurity related programs and resources available to students and faculty.

The core Cyber Defense program at Leeward CC is in the Information and Computer Science program (ICS). The ICS program provides students with a wide background in Information and Computer Science Including programming, networking, operating systems, and security fundamentals. Embedded in this program are Certificates of Achievement in Information Security, and Competence in Information Security. These certificates are built on the Knowledge Unit (KU) requirements for a collegiate institution to be recognized as a CAE-2Y. The program also features support for the following industry recognized certifications: A+, Network+, Security+, and Linux+.

In addition, our ICS program has an articulation agreement with the University of Hawai'i at West O'ahu (UHWO). Once Leeward CC ICS students receive their AS in ICS they can transfer to UHWO and complete the Bachelors of Applied Science in both IT and Information Security Assurance.

The ICS program provides students with an extensive amount of hands-on training. Courses are held in the classrooms that are supported and maintained by the campus. The classrooms provide students with computers and technical resources where the student gains experience programming computer applications, web applications, configuring and managing virtual systems and networking equipment such as routers, switches and firewalls. The ICS Program runs a datacenter which provides a virtual desktop infrastructure which is used to support the hands-on portion of various ICS courses.

#### **DESIGNATIONS**

CAE – Cyber Defense 2-Year Education

#### **CONTACT INFORMATION**

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leeward.hawaii.edu/cybersecurity





# LEWIS UNIVERSITY



Lewis University has been a Center of Academic Excellence since 2011, first in Information Assurance Education, and now in Cyber Defense. A mid-sized Catholic institution located about thirty miles southwest of Chicago, Lewis serves 6,500 students, about 10% of whom major in a program offered by the Department of Computer and Mathematical Sciences (CaMS) or Management Information Systems (MIS).

Through its Bachelor of Science in Computer Science, CaMS offers a Concentration in Cybersecurity, which gives students an in-depth understanding of how computers and networks function so that they can use existing tools and create new technologies for detecting, preventing, combating, and investigating cyberattack. CaMS also offers Concentrations in Digital Forensics and Networking through its Computer Science degree, as

well as a Master of Science degree in Computer Science which offers comparable Concentrations in Cybersecurity and Digital Forensics. CaMS hosts the University's Cisco Networking Academy and award-winning Cyber Defense Club, which took first place at the 2018 Department of Energy Cyber Defense Competition.

MIS offers innovative programs in Information Security Management at both the undergraduate and graduate levels. Students from this program have competed in national competitions such as the Cyber 9/12 Strategy Challenge.

Students from both programs can take courses on campus or online through our CloudLab and NetLabs platforms. They also can minor in the other program for a truly comprehensive education in information security.

#### **DESIGNATIONS**

CAE - Cyber Defense Education

#### **CONTACT INFORMATION**

Faisal Abdullah Ray Klump
Chair of MIS Chair of CaMS
abdulfa@lewisu.edu klumpra@lewisu.edu

cs.lewisu.edu





## LIBERTY UNIVERSITY



Liberty University's cybersecurity program emphasizes real-world experience, meeting and exceeding industry standards, and student success. With six programs in cybersecurity, including undergraduate and graduate, we prepare students for careers such as: governance, risk management, compliance, technology, and secure development. Our Center for Cyber Excellence is the focal point for cyber programs and provides extracurricular activities, including a Cyber Defense Club that participates in regional and international competitions.

The School of Business at Liberty University is dedicated to building up Champions for Christ, emphasizing the character, ethics, and integrity that comes from a Christian worldview. Students learn from dedicated faculty with decades of real-world experience and who are committed to student success.



#### **DESIGNATIONS**

• CAE - Cyber Defense Education

#### **CONTACT INFORMATION**

(434) 592-7321 schoolofbusiness@libertyedu

liberty.edu/business/cyber-excellence





## LONG BEACH CITY COLLEGE



Long Beach City College (LBCC) consists of two campuses with an enrollment of more than 25,000 students each semester. LBCC is one of the largest and oldest California community colleges in the state. Founded in 1927, LBCC is committed to providing delivering high-quality educational programs and support services to our diverse communities.

LBCC serves the cities of Long Beach, Lakewood, Signal Hill, and Avalon and promotes equitable student learning and achievement, academic excellence, and workforce development by delivering high-quality educational programs and support services within four schools housing its instructional programs. Long Beach City College's primary purpose is to prepare students for transfer to baccalaureate-granting institutions, career

development, and to support the community through economic development programs. The College's reputation is further enhanced by innovative partnerships like the Long Beach College Promise 2.0.

The LBCC Computer Networking and Security program offers both an Associate of Science and Certificate of Achievement that are recognized as National Security Agency Center of Academic Excellence-2Y awards. The program began in 2013 and is one of the largest onsite cybersecurity programs in the state of California. It focuses on hands-on, up-to-date, practical skills in cybersecurity and information technology fundamentals. Prior graduates are working for the Department of Defense, Microsoft, Sony, East West Bank, and the Central Intelligence Agency.

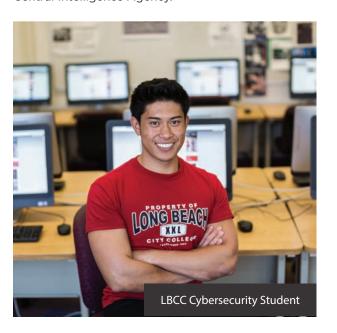
#### **DESIGNATIONS**

• CAE - Cyber Defense 2-Year Education

#### CONTACT INFORMATION

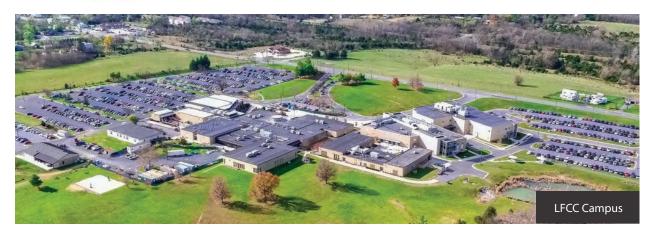
Garrett Whelan (562) 938-3244 gwhelan@lbcc.edu

lbcc.edu/cybercenter





# LORD FAIRFAX COMMUNITY COLLEGE



Founded in 1970, **Lord Fairfax Community College (LFCC)** is a comprehensive, multi-campus public institution of higher education. The College serves eight localities in the Shenandoah Valley and Piedmont regions of Virginia.

Lord Fairfax Community College (LFCC) offers two pathways to develop the skills and knowledge needed to embark on a successful career within the field of cybersecurity: 1) the Associate of Applied Science (AAS) in Cybersecurity and 2) the Cybersecurity Career Studies Certificate (CSC). The AAS degree program can be completed in two years with potential transfers to four-year bachelor's degree programs or by choosing employment in the cybersecurity field. The CSC can be completed in one year and/or can be transferred in to the AAS degree program, if so chosen at a later time.

The cybersecurity faculty at Lord Fairfax Community College strive to incorporate into their classes the latest technologies and methods that a security defender must exercise to thwart attackers. Faculty incorporate a wealth of knowledge through education and internship experiences in several facets of cybersecurity (penetration testing, secured software development, security policies, risk management, firewalls, digital forensics, and cyber-law). These experiences provide a diverse and solid foundation, allowing LFCC students to pursue numerous opportunities in the field of cybersecurity.

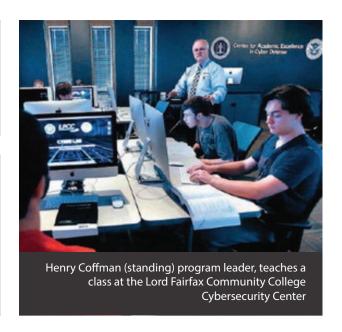
#### **DESIGNATIONS**

• CAE - Cyber Defense 2-Year Education

#### **CONTACT INFORMATION**

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Ifcc.edu/cybersecurity





### **MARQUETTE UNIVERSITY**



The mission of Marquette University's Center for Cyber Security Awareness and Cyber Defense is to provide excellence in education about cybersecurity, service through partnerships with the university and community, and research opportunities in cybersecurity technology, cybersecurity preparedness and cybersecurity education.

Marquette University's master of science in computing with a specialization in information assurance and cyber defense is designed to establish the knowledge about security planning and management, and cyber issues and defenses for networks, databases and computing infrastructure. This specialization is the academic focus for the designation of Marquette University as a Center of Academic Excellence in Cyber Defense Education by the National Security Agency and the Department of Homeland Security.

The courses for this specialization reflect a broad technical perspective. While studying theory and performing classroom exercises serve to provide foundational knowledge, practical experience reinforces understanding. Our program requires students to demonstrate their understanding through a practical, professional experience. In addition, Marquette University had been recognized by U.S. News & World Report, ranking 11th nationally in Best Online Graduate Computer Information Technology Programs.

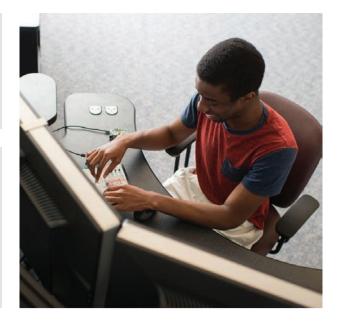
#### **DESIGNATIONS**

• CAE - Cyber Defense Education

#### **CONTACT INFORMATION**

Dr. Thomas Kaczmarek (414) 288-6734 thomas.kaczmarek@marquette.edu

marquette.edu/cyber-security





# MARYMOUNT UNIVERSITY



Marymount University is an independent Catholic university in Arlington, VA, close to many federal government agencies including the Department of Homeland Security, the Central Intelligence Agency, and the Pentagon. The school offers progressive cybersecurity programs at the undergraduate, masters, and doctoral levels. within the context of a liberal arts education. There are currently over 400 students in the various cybersecurity programs.

The BS in Information Technology is the third largest program at the university. After receiving a core knowledge across the computer science curriculum, students select one or more specialties including networking and cybersecurity, applied cybersecurity, cloud computing, computer science, forensic computing, and data science. The BS in Cybersecurity is an accelerated second-degree program for career changers who have completed a 4-year degree at an

accredited institution in another subject area and looking to join the cybersecurity workforce.

At the master's level, Marymount offers an MS in Information Technology, with a specialization in Cybersecurity, designed primary for career changes with management in mind. The MS in Cybersecurity is offered for students who are IT professionals and includes specialties in digital health and data science. A variety of dual degrees are also available, combining IT or Cybersecurity with an MBA or MS in Health Care Management, or combining the IT and Cybersecurity degrees. At the doctoral level, a D.Sc. in Cybersecurity is designed specifically for working cybersecurity professionals. The emphasis is on applied research across a wide variety of cybersecurity areas including cyber threat intelligence, human factors, machine learning applications, and more.

#### **DESIGNATIONS**

CAE-Cyber Defense Education

#### CONTACT INFORMATION

Dr. Diane Murphy (703) 284-5958 dmurphy@marymount.edu





### MERCY COLLEGE



Founded by the Sisters of Mercy in 1950, Mercy College became a four-year college offering baccalaureate degrees in 1961. Mercy is a New York metropolitan area college of more than 9,000 students studying at four campuses and online. The main campus is in Dobbs Ferry with branch campuses in the Bronx, Manhattan, and Yorktown. The College expanded its offerings to include online program in the 1990s, and soon was able to offer entire degree programs online. Mercy College is committed to providing motivated students the opportunity to transform their lives through higher education by offering liberal arts and professional programs in personalized and high quality learning environments, thus preparing students to embark on rewarding careers, to continue learning throughout their lives, and to act ethically and responsibly in a changing world.

The Mercy College Cybersecurity Program offers classes at the Dobbs Ferry campus, the Bronx Campus, and online. Future plans include expansion to the Manhattan campus. The Mercy Cybersecurity Education Center (MCEC) was founded in January 2008 with a mission to develop high quality cybersecurity professionals by providing:

- Undergraduate and graduate cybersecurity education with experience in a variety of technology-driven solutions;
- Research and development for skills to identify security issues and defend cyber threats across private, public, and corporate infrastructure;
- Services to social and academic communities for cutting-edge cybersecurity technology advancement.

#### **DESIGNATIONS**

• CAE - Cyber Defense Education

#### **CONTACT INFORMATION**

John Yoon (914) 674-7461 jyoon@mercy.edy

cysecure.org • mercy.edu/ias





# METROPOLITAN COMMUNITY COLLEGE - KANSAS CITY



Metropolitan Community College (MCC) is the oldest and largest public institution of higher learning in Kansas City, Missouri, founded in 1915 as the Kansas City Polytechnic Institute. The Junior College of Kansas City, as it was known starting in 1919, was one of the first schools in the country to award an associate's degree. Today, MCC offers 125 associate degrees and certificate programs.

Metropolitan Community College comprises five campuses serving more than 30,000 students annually on the Missouri side of the Greater Kansas City area. MCC is accredited by the Higher Learning Commission of the North Central Association of Colleges and Schools. MCC offers a program path for students starting careers in cybersecurity. The A.A.S. Secure Systems Administration and Engineering program allows students to earn stackable

certificates, mapped to industry credentials, while working to complete an A.A.S. degree.

The Secure Systems Administration and Engineering program has experienced significant growth in recent years, and has produced well over 100 program completers during that time. In 2018, MCC achieved the designation as a Center of Academic Excellence in Cyber Defense at 2-year institutions (CAE-2Y).

MCC was an original member of the Cybersecurity Education Consortium (CSEC) and is a current member of the National CyberWatch Center. MCC remains active in the CAE community and the Cybersecurity Program Coordinator, Brian Hurley, serves as a mentor for other schools seeking CAE designation.

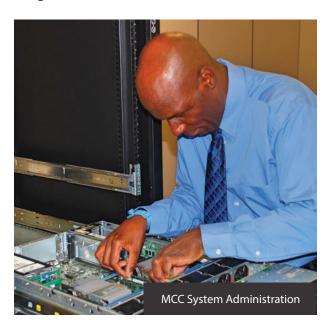
#### **DESIGNATIONS**

• CAE - Cyber Defense 2-Year Education

#### **CONTACT INFORMATION**

Brian Hurley (816) 604-6659 brian.hurley@mcckc.edu

mcckc.edu/cyber





# METROPOLITAN COMMUNITY COLLEGE



**Metropolitan Community College's** Cybersecurity Center was established to support students and the community with resources on cybersecurity and to promote awareness in the metropolitan Omaha community.

MCC offers an Associate of Applied Science in Cybersecurity and students have the opportunity to continue their education at two universities as well as through the noncredit side of the college to obtain certifications in A+, Network+, and Security+.

Since 1974, MCC has delivered relevant, student-centered education to a diverse community of learners. The College boasts nine locations in a four-county area, giving access to tens of thousands of students to dozens of degree and certificate programs.

MCC serves more than 40,000 students annually and is focused on training students for fulfilling careers. Class sizes average 15 students and are led by instructors with first-hand, real-world experience and knowledge.

At MCC, students can do their degree differently. Classes can be taken on campus, online or as a hybrid. The College boasts resources for every kind of student who may need help getting started or along their educational journey.

For those looking to continue learning, they can enroll in a single class, or work toward a certificate. MCC offers classes for students of all ages, from children to seniors.

#### **DESIGNATIONS**

• CAE - Cyber Defense 2-Year Education

#### **CONTACT INFORMATION**

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# METROPOLITAN STATE UNIVERSITY



Metropolitan State University, a member of the Minnesota State higher education system, is an accredited, comprehensive, urban university that provides accessible, affordable, high-quality student-centric educational programs to the citizens and communities of the twin-cities metropolitan area, with continued emphasis on underserved groups, including adults and communities of color. The university's faculty, staff, and students reflect the area's rich diversity, build a culturally competent and anti-racist learning community and demonstrate an unwavering commitment to civic engagement. The university is a "Yellow Ribbon" company and provides veterans and active military personnel with community support, training, access to services, and the resources to further their personal and professional goals. The University proudly houses MN Cyber; a statewide education, research, and

training institute for cybersecurity, forensics, and IoT, with the main goal to position Minnesota as a national leader in cybersecurity and its related workforce through education, legislative and community engagement, and innovative public-private partnerships. The Institute helps foster the statewide cybersecurity ecosystem by providing necessary infrastructure, research, education, and training capabilities to all the stakeholders including K-12 schools, institutions of higher learning, private businesses, state government, staffing and recruiting agencies, the Minnesota National Guard, and other local professional organizations. The Institute also provides advanced cybersecurity training through MN Cyber Range. The Institute receives its guidance through the advisory board that comprises of CISOs from major organizations (United Health Group, 3M, US Bank, Best Buy etc.) as well as state legislators.

#### **DESIGNATIONS**

• CAE - Cyber Defense Education

#### CONTACT INFORMATION

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mncyber.org





## MIDDLE GEORGIA STATE UNIVERSITY



Middle Georgia State University (MGA) is a regionally focused university serving 7,800 traditional and adult students with campuses in Macon, Cochran, Dublin, Eastman, and Warner Robins. The University is one of the state's best values in public higher education; a student can earn a bachelor's degree for about \$20,000, which is about \$2,500 in tuition and fees per semester.

MGA's School of Information Technology offers a Bachelor of Science in Information Technology (BSIT) program which is accreditated by the Computing Accreditation Commission of ABET and includes a concentration in Cybersecurity.

The School also offers a fully online Master of Science in Information Technology with a concentration in Cybersecurity and Forensics. With a student enrollment of nearly 950 students, the School of Information Technology is fully equipped to produce the next generation of technology and cybersecurity experts. Students have one-on-one interaction with highly qualified faculty who are actively engaged in research publications and scholarly activities.

Students utilize state-of-the-art digital forensics and security labs. Outside the classroom, students participate in cyber defense competions. Each year the School's Center for Cybersecurity Education and Applied Research (CCEAR) hosts an Academic Cybersecurity Seminar to provide students and the community the opportunity to network with experts in the cybersecurity field.

## **DESIGNATIONS**

• CAE - Cyber Defense Education

## **CONTACT INFORMATION**

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mga.edu/ccear





## **MISSISSIPPI STATE** UNIVERSITY



Mississippi State University (MSU) has been a part of the NSA Center of Academic Excellence Program since 2001. Currently, MSU holds all three CAE designations for which Carnegie classified Doctoral Universities: Very High Research Activity may qualify. The MSU CAE effort is led by MSU's Center for Cyber Innovation (CCI). CCI is part of the High Performance Computing Collaboratory at Mississippi State University. CCI develops cutting-edge solutions for Defense, Homeland Security, and the Intelligence Community. The primary focus of CCI is to research, prototype, and deliver cyber solutions that support global national security, homeland security, and peacekeeping operations.

CCI has been a pioneer in cyber defense research. Security architecture provides the blueprint for in-depth defense strategies. You cannot avoid cyber

**DESIGNATIONS** 

- CAE Cyber Defense Education
- CAE Cyber Defense Research
- CAE Cyber Operations

## **CONTACT INFORMATION**

**Dr. Drew Hamilton** (662) 325-2294 hamilton@cci.msstate.edu

cci.msstate.edu

threats if you do not know how systems connect and what software those systems are running. Scalable, security architecture is a critical enabling technology required to model, defend, and wargame networkintensive cyber networks.

MSU supports one of the most robust cyber infrastructures of any university. CCI researchers have access to state-of-the-art high performance computing assets to include petabyte scale high-speed storage. CCI has the capability to scale up laboratory research into enterprise scale cyber demonstrations and to do so in NOFORN and other restricted environments.

Academically, MSU students pursuing the CAE-CO path complete our Master of Science in Cyber Security & Operations. There are multiple paths for students from Arts & Sciences, Business and Engineering to complete the Information Assurance Certificate that completes the CAE-CDE path.



MSU cybersecurity students pictured with the NSA-sponsored Shadow supercomputer at HPC2.



## MISSOURI UNIVERSITY OF SCIENCE AND TECHNOLOGY



With more than a decade as a CAE-R designated university and eight cybersecurity experts with active federal and industry research in the field, **Missouri S&T** is one of the nation's leaders in addressing cybersecurity threats. Missouri S&T's cybersecurity research program emphasizes cyber-physical security for critical infrastructures – from power plants to autonomous vehicles. The S&T computer science and computer engineering programs partner with 16 engineering and science disciplines across campus to create secure smart grid systems, manufacturing systems, sensor clouds, water treatment facilities, aerospace systems, and smart living environments.

S&T's cybersecurity experts are also highly regarded teachers. They actively mentor student researchers at the undergraduate, master's, and doctoral levels to prepare them for cybersecurity careers in

government, industry, and education. Students have access to cybersecurity courses that meet the NICE criteria at the advanced undergraduate and graduate levels.

Missouri S&T is a STEM-focused institution of 9000 students. It was founded in 1870 as one of the first technological institutions west of the Mississippi. The pursuit of innovative, collaborative applications with faculty and researchers at Missouri S&T has helped the university define its research and teaching strengths. The following four signature research areas connect to long-term critical national issues, research and entrepreneurship potential, and align with Missouri S&T's strategic plan. These areas are Advanced Manufacturing, Advanced Materials for Sustainable Infrastructure, Enabling Materials for Extreme Environments, and Smart Living.

### **DESIGNATIONS**

• CAE - Cyber Defense Research

## CONTACT INFORMATION

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# MOHAWK VALLEY COMMUNITY COLLEGE



Cybersecurity involves protecting information and systems from major cyber threats, such as cyber terrorism, cyber warfare, and cyber espionage. In their most disruptive form, cyber threats take aim at secret, political, military, or infrastructural assets of a nation, or its people. Governments, private industries, and institutions spend billions of dollars annually on cybersecurity.

**Mowhawk Valley Community College's** 

Cybersecurity Associate Degree program combines the study of criminal justice and computer technology to address current needs in the cybersecurity field. It prepares students to identify vulnerabilities and threats that affect corporate and government computer networks; to protect critical information in cyberspace; and to effectively design, implement, and support security policies for a large

scale enterprise network.

Students examine a wide variety of security analysis/defensive tools and concepts, and then attempt to circumvent them. This program prepares students to transfer to upper division cybersecurity programs or assume entry-level positions in the cybersecurity Industry.

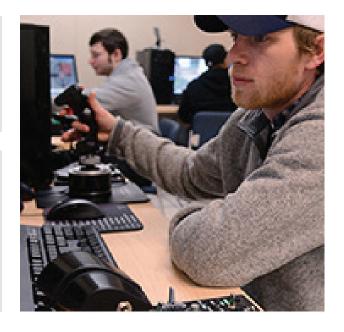
## **DESIGNATIONS**

• CAE - Cyber Defense Education

## **CONTACT INFORMATION**

Jake Mihevc (315) 792-5653 jmihevc@mvcc.edu

mvcc.edu/cyberlab





## MONTREAT COLLEGE



Montreat College's Bachelor of Science in Cybersecurity degree equips students with the knowledge and skills necessary to serve in today's competitive business and government environment. Operating under the college's Center for Cybersecurity Education and Leadership, Montreat's program emphasizes character and ethics as essential components of cybersecurity education. "Every cyber program in America teaches students how to be offensive hackers," says Montreat College President Paul Maurer. "When you teach a student to do that, they'd better have a moral compass, because every frontline cyber professional in the world has the keys to your kingdom."

Montreat College's program provides training and preparation in information technology, cybersecurity, business administration, and quantitative analysis, preparing students for professional positions in a

variety of technology specializations. Montreat's unique approach to teaching combines the theoretical with the practical, as faculty bring extensive real-world technology experience to the classroom. Classroom instruction is often augmented with outside technology speakers and information technology facility tours. In many courses, student projects involve solving technology problems and providing information technology services to actual real-world organizations. Additionally, all students complete cybersecurity internships prior to graduation.

Since receiving the CAE-CDE designation for the bachelor's degree program, Montreat College has added cybersecurity certificate programs, a cybersecurity associate degree program, and a Master's of Business Administration with a concentration in cybersecurity management.

## **DESIGNATIONS**

CAE – Cyber Defense Education

## **CONTACT INFORMATION**

Kelli Burgin (montreat.edu kelli.burgin (montreat.edu kelli.burgin (montreat.edu kelli.burgin (montreat.edu kelli burgin (montrea

montreat.edu/academics/undergraduate/c ybersecurity





## MORAINE VALLEY COMMUNITY COLLEGE



Moraine Valley Community College (MVCC) was the first community college in the country to offer an Associates of Applied Science (AAS) degree in cybersecurity. MVCC was a member of the 2010 inaugural class for two-year institutions earning CAE designation. As an early member of the academic cybersecurity community, the faculty and staff at MVCC addressed some of the challenges in offering a practical and relevant cybersecurity program. One of the first innovations addressed was teaching cybersecurity concepts and technologies in a safe environment in which students could learn and explore. The MVCC team created a virtual teaching and learning center and has developed a lab library of over 400 exercises. This environment and lab library have been adopted by over 250 institutions nationwide. As a Regional Resource Center, MVCC offers a full faculty development program each

summer that has served over 5000 teachers.

The MVCC team is also very active in the NSA mentoring program. Over the years, MVCC has mentored over 30 institutions. The MVCC program services over 300 students each semester and has placed graduates in every major industry and in multiple government agencies. MVCC also partners with several industry certification organizations and business partners in offering sponsored certification courses within our curriculum. These would include CompTIA, EC-Council, Palo Alto Networks, Cisco, LPI, Dell VMware, ISC2, and ISACA. The MVCC program is distinguished in the fact that we offer several leading-edge specializations including IoT, Mobile and Cloud Computing, and Industrial Controls Security.

## **DESIGNATIONS**

• CAE - Cyber Defense 2-Year Education

## CONTACT INFORMATION

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www.CSSIA.org





## MORGAN STATE UNIVERSITY



Morgan State University's Network Information and Embedded Systems Security Center of Academic Excellence (NIESS-CAE) is designed to provide a portal through which our students and faculty can learn about reducing vulnerabilities in our national information infrastructure. Morgan has a commitment to the development of academic programs in support of a Cyber Security Center of Excellence. Certificate options are being developed for the Electrical Engineering, Computer Science and Information Science and Systems Departments. Within the Electrical Engineering program, there are currently four options, based on academic level, that a student can take as a pathway to cybersecurity learning.

We have established a process that provides programs in the field of cyber defense education at

the graduate and undergraduate levels; continuously improves the quality of our cyber defense program, curriculum, faculty and students; and provides the nation with a pipeline of qualified students eager to become cyber defense professionals.

With this process in place, we expect to produce a growing number of professionals with expertise in various cyber defense disciplines. Morgan has one of the highest graduation rates of African-American electrical engineers and we hope to open the cybersecurity market to this community.

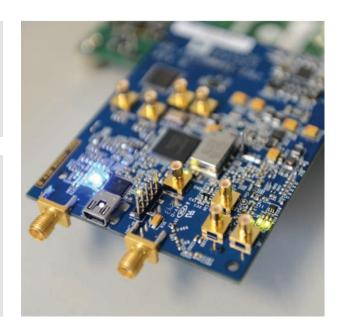
#### **DESIGNATIONS**

• CAE-Cyber Defense Education

## **CONTACT INFORMATION**

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morgan.edu/soe/niess-cae





## MT. HOOD COMMUNITY COLLEGE



The CyberSecurity and Networking Degree program at Mt. Hood Community College (MHCC) was initiated in 2011 and was the first AAS degree in cybersecurity in Oregon. Using support for curriculum, training, and travel generously provided by CyberWatch and CyberWatch West, MHCC faculty created the Oregon Center for Cyber Security (OCC-SEC) and became a CAE-2Y college in 2014. Although founded on existing IT and Cisco Networking training, MHCC faculty chose to focus on training directed towards specific industry recognized certifications such as the A+, Linux+, Security+, CCNA and CCNA Security, Oracle certifications and more.

In 2018-2019, MHCC had the opportunity to dramatically enhance the entire cyber program with the addition of trainings specific for Cisco Cyber Operations, Certified Ethical Hacker, Red Hat CSA,

**DESIGNATIONS** 

• CAE - Cyber Defense 2-Year Education

**CONTACT INFORMATION** 

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mhcc.edu/cybersecurity

and Palo Alto Network firewall implementation. Adding a new degree pathway into Penetration Testing, as well as several certifications allows existing professionals in industry to hone their skills in a focused training path.

Using funding from an NSF grant, the CyberSecurity program created a collaborative effort with our Small Business Development Center (SBDC) and designed a small business advisory team using cyber student interns to deliver focused cybersecurity training, evaluation, and mentoring to local small and medium sized businesses. Between 2018 and 2019, over a dozen cyber students fulfilled their internship requirements by working directly to support members of the regional small business community.

Graduates from this program have gone on to excellent careers in local businesses, consulting firms, regional critical infrastructure, and military, and at least one-third of the graduates continue their education at some of the local four-year institutions.





## NATIONAL UNIVERSITY



Founded in 1971, **National University (NU)** is among the largest, private, nonprofit universities in California. Dedicated to making quality education accessible and affordable to adult learners who represent nearly 40 percent of the postsecondary population, NU offers over 100 programs at locations throughout California, across the nation, and online.

NU's School of Engineering and Computing was among the first schools in San Diego to offer a master's degree in cybersecurity in 2011 and launched a bachelor's program in April 2017. The University is one of just six designated centers in California and the first and only in San Diego to be named a CAE-CDE. Cybersecurity programs are tailored to meet workforce demands conveyed directly to faculty by the University's Cybersecurity Advisory Board, which consists of industry representatives from public, private, and government

organizations. NU established over 50 academic partnerships with private and public organizations to prepare students to meet industry standards and has articulation agreements with more than 100 community colleges.

To inspire future cybersecurity professionals, NU supports community partners with the SoCal Cyber Cup Challenge for middle and high school students in San Diego and neighboring counties. As a Hispanic Serving Institution, NU was selected by HACU to host the STEM Youth Leadership Development Forum in 2017, an interactive day of exploring STEM fields, including cybersecurity, for over 500 middle and high school students. A veteran-founded nonprofit, NU was named a military-friendly college, and one in four NU students are active duty or have previously served in the military.

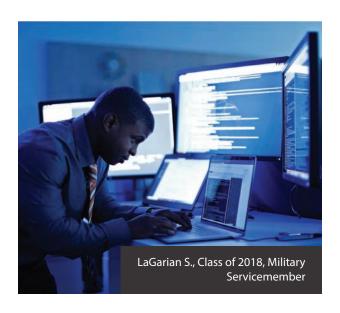
## **DESIGNATIONS**

• CAE-Cyber Defense Education

## **CONTACT INFORMATION**

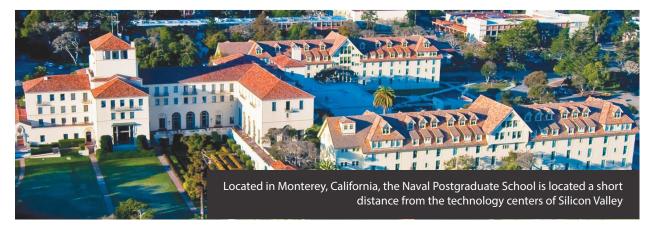
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## NAVAL POSTGRADUATE SCHOOL



The Naval Postgraduate School provides relevant and unique advanced education and research programs to increase the combat effectiveness of commissioned officers of the naval service to enhance the security of the United States.

Established in 1909, NPS moved west to Monterey, California in 1951. Today, NPS serves naval, defense, and national security related interests by enhancing current and future readiness, fostering advances in technology, and providing educational and operational programs that directly support all facets of national defense and homeland security.

At NPS, four world-class schools oversee 14 academic departments that offer 77 Master's degrees, 16 doctoral degrees and 60 certificate programs to the U.S. Armed Forces, DoD civilians, and international partners.

Secure research facilities, interdisciplinary academic groups, and 31 research centers add to the wealth of resources. NPS offers both resident and distributed-learning programs. Continuous learning, refresher and transitional educational opportunities abound, and executive education courses and a variety of short courses are also offered by NPS, both in Monterey and abroad.

Over 650 scholars and professionals com prise the NPS faculty. Students and faculty are deeply involved in the development, advancement, and utilization of emerging technologies. For over 25 years, by combining classroom instruction with hands-on experimentation, NPS continues its leadership role in cyber defense and cyber operations.

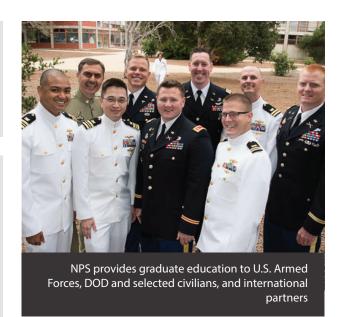
## **DESIGNATIONS**

- CAE Cyber Defense Education
- CAE Cyber Defense Research
- CAE Cyber Operations

## **CONTACT INFORMATION**

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## NEW JERSEY CITY UNIVERSITY



The **New Jersey City University (NJCU)** Cybersecurity program is an interdisciplinary center for cybersecurity education, training, and research. The center aims to provide current and future professionals with the knowledge and skills necessary to strive and compete within the cybersecurity community. Our student's foundation is built through their degree program, certificates,f and research opportunities.

NJCU students have realized significant career success as a result of our Information Assurance/Cyber Security offerings. Students are working in agencies such as the New Jersey Office of Homeland Security and Preparedness, United States Department of Homeland Security, The Regional Operational Intelligence Center of the New Jersey State Police (Fusion Center), Coast Guard Intelligence, Naval Intelligence, National Security Agency (directly and

with contractors), and others. Additionally, we have graduates that have enhanced their careers even on the municipal policing level, working to develop their agency's information assurance programs. We also have those working in the private corporate sector.

The Cybersecurity Club at NJCU is a student-run organization focused on Cyber and Information Security topics. We provide free training using advanced technologies in digital forensics, log analysis, server configuration and hardening, virtualization, and industry leading certificates training. We utilize state-of-the-art Cyber Lab also known as Simulated Command Center with Cyber Lab located in the Professional Studies building.

President Sue Henderson Ph.D. is immensely supporting the advancement of our cybersecurity program, training, and research.

#### **DESIGNATIONS**

CAE - Cyber Defense Education

## **CONTACT INFORMATION**

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## NEW MEXICO TECH



**New Mexico Tech** is a public education and research university focused in science, technology, engineering, and mathematics, and is classified by the Carnegie Classification as a Research Doctoral: STEM-Dominant Institution.

With a long history of national defense related research, the Computer Science and Engineering (CSE) department at New Mexico Tech started to offer cybersecurity focused educational programs in 2001. The Information Technology (BS in IT) program, with the special emphasis on cybersecurity, was developed to serve as a national powerhouse for better training cybersecurity workforce with integrated research, training, and educational efforts. The CSE department offers BS in Computer Science, MS in Computer Science, and PhD in Computer Science degree programs. In addition, the department recently developed and offered a

graduate certificate program in cybersecurity for graduate students and post-baccalaureate professionals who want to build and strengthen their capabilities in cybersecurity for their academic and professional work. The cybersecurity program at the department includes foundational course offering such as Cryptography and Applications, Foundations of Information Security, Information Protection and Security, and Network Security, as well as many special topic and advanced courses on cybersecurity such as Access Control & System Security, Secure System Administrations, and Hardware-based Network Security.

New Mexico Tech is also the home of the Institute for Complex Additive Systems Analysis (ICASA), established by the New Mexico Legislature as a computer security and forensics division focused on cyberterrorism and cybercrime.

### **DESIGNATIONS**

CAE - Cyber Defense Research

## **CONTACT INFORMATION**

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## NEW YORK UNIVERSITY



New York University (NYU) is a private doctoral research university which is accredited by the Middle States Commission on Higher Education and New York State to award bachelor, masters, and advanced certificate degrees. The CAE-CO designation is for our Master of Science in Cybersecurity program. The CAE-R designation is for our Doctor of Philosophy in Computer Science program. The face-to-face program has been in existence at NYU for many years. This year, we extended the program to allow working adults from all over the country to remotely participate part-time in the program and attracted over a hundred students in our first cohort.

Due to the dedicated and successful work of promoting excellence in its cybersecurity programs, NYU has taken significant steps to institutionalize and sustain efforts through multiple educational and research initiatives. Recent initiatives include the

## **DESIGNATIONS**

- CAE Cyber Operations
- CAE Cyber Defense Research

## **CONTACT INFORMATION**

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establishment of The NYU Center for Cybersecurity (CCS). NYU CCS is an interdisciplinary research institute dedicated to training the current and future generations of cybersecurity professionals and to shaping the public discourse and policy, legal, and technological landscape on issues of cybersecurity. NYU CCS is a collaboration between the NYU School of Law, NYU Tandon School of Engineering, and other NYU schools and departments. NYU CCS has institutional support as it helps NYU to deliver interdisciplinary cybersecurity education.

NYU offers students many diverse career and academic paths through four different graduate programs in cybersecurity. These include full and part-time online applied Master of Science degree in Cybersecurity, an interdisciplinary program in cybersecurity risk and strategy and a traditional academic Ph. D. in computer science with a focus in cybersecurity. The MS in Cybersecurity has the option to take courses both on-campus and online. A part-time lock-step curriculum for US citizens who want to pursue the MS in Cybersecurity online is available through the NY Cyber Fellowship program. The NY Cyber Fellowship provides a 75% scholarship towards tuition for the elite online Cybersecurity Master's Degree.

In the MS in Cybersecurity Risk and Strategy (CRS), courses are taught from a comprehensive perspective that combines the benefits of top-tier schools and leading faculty from computer science, law, policy, and business. CRS is a one-year program intended for experienced professionals from a range of backgrounds who seek to deepen their understanding of cybersecurity risk and strategy.



## NORTH CAROLINA AGRICULTURAL AND TECHNICAL STATE UNIVERSITY



## The Center for Cyber Defense at North Carolina Agricultural and Technical State University (NC

**A&T)** was designated as a National Center of Academic Excellence in Information Assurance Education for the Academic Years 2010-2015 and was redesignated as National Center of Academic Excellence in Cyber Defense Education (CAE- CDE) for the Academic Years 2014-2021.

The Center for Cyber Defense at NC A&T was designed to educate and prepare students to serve the United States as professionals in the field of cybersecurity. The primary goal towards meeting this objective is to develop its integrated education and interdisciplinary research program in cybersecurity.

The Department of Computer Science (CS) offers the following programs: B.S. Certificate in

Cybersecurity; B.S. in CS with a Cybersecurity track; M.S. in CS with a Cybersecurity track.

Faculty in the Center for Cyber Defense at NC A&T conduct research in various areas of cybersecurity, including cyber identity, big data and data analytics for cybersecurity, cloud security, biometric-based authentication, software security, usable security, human factors in security, mobile security, and assured social computing.

The research and education activities in the Center for Cyber Defense are funded by the Department of Defense, National Science Foundation, National Security Agency, and National Nuclear Security Administration.

## **DESIGNATIONS**

CAE - Cyber Defense Education

## **CONTACT INFORMATION**

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## NORTH CAROLINA STATE UNIVERSITY



NC State University was one of the first 23 National Centers of Academic Excellence in Cybersecurity Research (CAE-R), holding its designation since 2008. The university is located in Raleigh, NC and is part of the "Research Triangle," which is home to three large research universities and many technology companies including IBM, Cisco, NetApp, and RedHat. NC State's cybersecurity research expertise is based in the Department of Computer Science and its Wolfpack Security and Privacy Research (WSPR) Laboratory but extends to other departments including Electrical and Computer Engineering, Psychology, and Mathematics. NC State is the home of an NSA Science of Security Lablet, as well as the NSA Laboratory for Analytic Sciences (LAS).

Cybersecurity research at NC State spans many CAE focus areas, including principles, security mechanisms, architecture, assurance, and analysis. Its research

contributions range from theoretical to practical, from client-side to server-side, and the network in between. NC State has made strong contributions to the security and privacy of Android and iOS smartphones, building analysis tools to discover vulnerabilities and privacy flaws in both the platforms and their applications. It tackles hard problems in web browser security, developing novel analysis frameworks to help identify underlying principles that can lead to stronger protections for users. NC State has proposed novel security architectures for cloud platforms, providing security guarantees and functionality via hypervisors. Its research on software security has identified new metrics for predicting security vulnerabilities. Finally, research in cryptography has shown how advanced cryptographic protocols can enhance privacy of blockchain-based systems and explored new techniques to prove post-quantum security of existing cryptographic primitives.

### **DESIGNATIONS**

CAE – Cyber Defense Research

## **CONTACT INFORMATION**

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cae-r.ncsu.edu





## NORTHEAST COMMUNITY COLLEGE



Established by the State Legislature in 1973 as a comprehensive community college offering vocational/technical, liberal arts, college transfer, and continuing education, **Northeast Community College** is a two-year college serving residents of a 20-county area in the northeast edge of Norfolk, Nebraska. Northeast is the only community college in the state with one- and two-year vocational, liberal arts, and adult education programs all on one main campus.

#### **Service Area**

According to 2010 census figures, approximately 160,000 persons live in small towns, villages, and rural areas within the College's 20-county service area. Agriculture and agribusiness are the principal industries in the area. Northeast has three extended campuses and two regional offices to serve the

needs of off-campus students in the 20-county service area.

#### **Information Technology Degree Options**

The information technology career field has many areas of specialization. To give students the ability to choose their areas of specialization, the information technology department has developed several AAS degree concentrations which focus on a wide variety of topics. Students choose from two of the following career concentrations: Cisco Networking Academy, Information Security, IBMi Application Development, Web and Visual Application Development, and Technical Services Support. Any student that chooses Information Security as one of their two concentration areas will complete the required Knowledge Units as identified for CAE-2Y designation.

#### **DESIGNATIONS**

• CAE - Cyber Defense 2-Year Education

## **CONTACT INFORMATION**

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cybercenter.northeast.edu





## NORTHEASTERN UNIVERSITY



Cybersecurity has been a major focus of research and education at **Northeastern University** since the turn of the century. The University has been recognized as a CAE-CD since 2002, as a CAE-R since 2008, and as a CAE-CO since 2012.

Cybersecurity is treated as a cross-disciplinary field involving computer science, electrical engineering, criminal justice, political science, and law school. Interdisciplinary teams of researchers have been working on projects and challenges in cryptography, cloud security, malware analysis and detection, and privacy, among others. To integrate the cross disciplinary collaborations, the Cybersecurity and Privacy Institute was formed in 2016, allowing visiting researchers to work collaboratively with faculty members and students.

#### **DESIGNATIONS**

- CAE Cyber Defense Education
- CAE Cyber Defense Research
- CAE Cyber Operations

## **CONTACT INFORMATION**

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Northeastern University is active in expanding its cybersecurity education programs. At the undergraduate level, students are encouraged to participate in cybersecurity activities such as Capture the Flag and Hack Beanpot. Since 2008, students have participated in the National Collegiate Competition in Cyber Defense, placing second in the national championship in 2010. Strong student interest in the field prompted the creation of a new BS degree program in cybersecurity, introduced in 2017. The availability of NSF/SFS and DoD/CYSP scholarships has been a strong recruiting tool for the University.

Realizing that cybersecurity problems cannot be solved by technology alone, computer science faculty led the effort in designing an interdisciplinary MS program in cybersecurity to provide students a holistic view of cybersecurity, from both technical and social/economical standpoints. To further expand the graduate offerings, the University introduced an innovative interdisciplinary doctoral degree program in cybersecurity.

As one of the first CAEs in New England, Northeastern University has been frequently invited to serve on panels to discuss and to present cybersecurity education and research.





## NORTHERN KENTUCKY UNIVERSITY



Northern Kentucky University (NKU) is a growing metropolitan university of more than 14,000 students located in the southern suburbs of Cincinnati. NKU offered its first computer security course in 2000. The inception of the College of Informatics (CoI) in 2005 helped dissolve barriers between information disciplines, enabling faculty to rapidly create new cybersecurity programs.

Cybersecurity programs include minors in computer forensics and information security, certificates in corporate information security, cybersecurity, and secure software engineering, and security degree tracks in the information systems and information technology degree programs. Col nearly doubled enrollment during its lifetime to a total of 1928 students, while enrollment in the department of computer science has grown from 294 to 843 students.

NKU was certified as an NSA CAE in Cyber Defense Education in 2014. The university is in the process of renewing its CAE status with the new cybersecurity track of the CIT degree created in 2016. This track has higher security course requirements than previous cybersecurity programs, with four core cybersecurity classes and up to three elective cybersecurity classes. NKU will begin offering a bachelor of science in cybersecurity in 2020.

NKU has held an annual cybersecurity symposium since 2007 with over 400 attendees. NKU has an active cyber defense team, which has competed in the CCDC since 2009. The team has placed first in the state regularly and competed in the national CCDC in 2014, placing sixth. NKU has also held a variety of cybersecurity outreach programs for K-12 students, including summer camps and workshops for Girl Scouts to obtain cybersecurity badges.

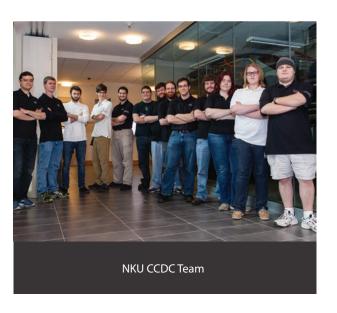
### **DESIGNATIONS**

CAE - Cyber Defense Education

## **CONTACT INFORMATION**

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## NORTHERN VIRGINA COMMUNITY COLLEGE



Northern Virginia Community College (NOVA) is ranked as the 14th largest and 9th most diverse college or university in the country. With more IT associate degrees of any community college in the nation, it has been ranked the most digital community college in the United States. NOVA was also one of the first community colleges in the United States to have a Cybersecurity (originally named Network Security) program in place. In 2001, a Network Security Career Studies Certificate (CSC) was developed that later grew into an Associate of Science (AAS) in Cybersecurity. NOVA was a founding member of the National CyberWatch Center, and also serves as one of NSA's National Resource Centers, helping other colleges and universities nationwide become CAEs and CAE-2Ys.

NOVA's AAS Cybersecurity, with over 2,000 enrolled students, is very much an applied degree, designed

to instill hard skills that the student can put into immediate practice in the workplace. The degree consists of 64 credits, of which 49 credits are hands-on IT/Cybersecurity courses, walking the student through an A+, Network+, Security+ curriculum, with more advanced security courses in the second year such as ethical hacking, and electives in Malware Reverse Engineering, Critical Infrastructure Security, and Cloud Computing. This focus on practical skills and topical security issues makes it an ideal degree for students who already have a degree in an unrelated discipline, such as history for example, and now wants to transition into a cyber career. For students just starting out, it transfers to seven different bachelor's degree programs (many of them CAEs) including George Mason University, Old Dominion University, George Washington University, Capitol Technology University, UMUC, ECPI, and Marymount University.

## **DESIGNATIONS**

• CAE - Cyber Defense 2-Year Education

## CONTACT INFORMATION

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nvcc.edu/cybersecurity





## NORWICH UNIVERSITY



**Norwich University** offers three cybersecurity programs: Bachelor of Science in Computer Security and Information Assurance, Bachelor of Science in Cyber Security online degree completion program, and a Master of Science in Information Security and Assurance. The services of our graduates at all levels are in high demand by private industry, government, law enforcement, the military, health services, and academia. Whether they are focused on computer network security, malware, forensics, or cyber investigation, our students will be well prepared for the kind of job that never gets stale and protects our country and private interests. With a focus on both theory and hands-on experience, Norwich provides a truly unique program utilizing state-of-the-art forensic tools unheard of at other institutions of this size. Norwich faculty make sure students at all levels and programs have a command of the basics, and

**DESIGNATIONS** 

• CAE - Cyber Defense Education

then find opportunities for them both to work with companies on real cases.

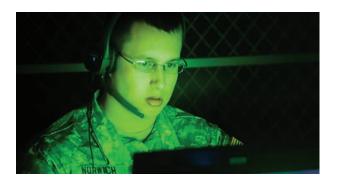
Ranked #2 by the Ponemon Institute for Cybersecurity in the U.S., Norwich University programs are consistently ranked among the best in the nation for cybersecurity education. Norwich University is recognized as a National Center of Academic Excellence in Cyber Defense Education by the NSA and DHS and has received designation as a Center of Digital Forensics Academic Excellence by the Defense Cyber Crime Center. Beginning in 2002, Norwich University became a member of what is now called National Science Foundation's CyberCorps®: Scholarship for Service program. Norwich is partnered with the United States Army Reserve to develop cyber-education curricula that align with federal standards and cybersecurity needs. Most recently, Norwich's online graduate program was named one of the top 10 best cybersecurity graduate programs in the country by Universities.com.

Norwich is also home to GenCyber@NU, a National Security Agency and National Science Foundation-funded cybersecurity camp for high school students.

## CONTACT INFORMATION

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norwich.edu/cyber





## NOVA SOUTHEASTERN UNIVERSITY



Nova Southeastern University (NSU)'s College of Engineering and Computing (CEC) is situated in a sprawling, 314-acre Fort Lauderdale-Davie campus. NSU, established in Fort Lauderdale, Florida in 1964 as a small college with some revolutionary ideas, currently has approximately 24,000 students and 172,000 alumni. NSU is classified as a research university with "high research activity" by the Carnegie Foundation for the Advancement of Teaching, and is one of only 50 universities nationwide to also be awarded Carnegie's Community Engagement Classification. It is the largest private, not-for-profit institution in the United States that meets the U.S. Department of Education's criteria as a Hispanic-Serving Institution.

Designated by NSA/DHS as a National Center of Academic Excellence in Cyber Defense Education

(CAE-CDE) since 2005, NSU is a recognized regional and national leader in cybersecurity education. Our distinguished faculty engage students in a unique, interactive learning environment that facilitates academic excellence and prepares our students for their future careers while they earn a B.S., M.S., or Ph.D degree, especially in our cybersecurity programs.

NSU offers three graduate degrees focused on cybersecurity: M.S. in Information Assurance & Cybersecurity (Technical with focus on Network Security Engineering); M.S. in Cybersecurity Management (Managerial with focus on Security Policy Development and Compliance); and Ph.D. in Information Assurance.

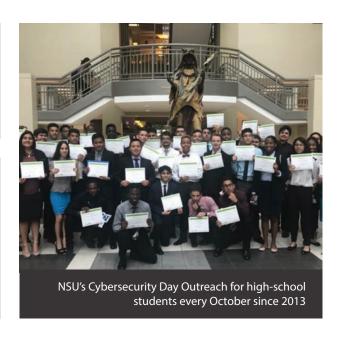
## **DESIGNATIONS**

• CAE - Cyber Defense Education

## CONTACT INFORMATION

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## OKLAHOMA CITY COMMUNITY COLLEGE



Since its inception in 2003, **Oklahoma City Community College's (OCCC)** Cyber/Information
Security program strives to prepare students for many in-demand cybersecurity positions. Graduates have obtained positions in both private industry and government positions throughout Oklahoma and surrounding states.

In April 2010, OCCC was among the first six, 2-year institutions to receive the designation as a National Center of Academic Excellence in Cyber Defense Two-Year Education (CAE-2Y). We are proud that OCCC has continued to maintain this designation until 2021. This prestigious designation validates the education received by OCCC students.

OCCC offers an Associate degree and a Certificate of Mastery in Cyber/Information Security. Classes offer an offensive and defensive approach to cybersecurity and topics covered include computer operating systems and hardware, computer programming, database systems, information security principles, network security and administration, secure e-commerce, enterprise security management, and cyber forensics. Students are also prepared for industry preferred cybersecurity related certifications.

OCCC students are provided a hands-on and well-rounded experience to develop their knowledge that is geared towards meeting industry needs. This is achieved through classroom lectures, labs inside and outside the classroom, in-class student presentations, individual and group research projects, guest lectures, Cyber Club meets, and National Cyber League Competitions. OCCC also hosts monthly InfraGard and quarterly Information Systems Security Association (ISSA) to further align its program with industry needs.

## **DESIGNATIONS**

CAE – Cyber Defense 2-Year Education

## **CONTACT INFORMATION**

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occc.edu/bit/ccde.html





## PACE UNIVERSITY



Pace University is committed to excellence in cyber defense education and research. Our undergraduate programs include the Bachelor of Science in Information Technology with a focus in security, and the Bachelor of Science in Professional Technology Studies with a Computer Forensics concentration. Our graduate programs include the Master of Science in Information Technology with a Cybersecurity concentration, the Master of Science in Computer Science with a Web Security concentration, and the Master of Science in Information Systems with an Information Assurance career path.

Pace offers a PhD in Computer Science and many doctoral students focus on cybersecurity related research. In addition, Pace provides cybersecurity scholarships supported by the Department of Defense's Cyber Scholarship Program (CySP) and the National Science Foundation's Scholarship for

## **DESIGNATIONS**

CAE – Cyber Defense Education

## **CONTACT INFORMATION**

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pace.edu/seidenberg/cybersecurity-lab

Service: CyberCorps® Program (SFS). Graduates of these programs become successful cybersecurity professionals holding key positions in the government, the private sector, and academia. Pace's interdisciplinary offerings include the undergraduate minor in Information Assurance in the Criminal Justice System and the Master of Arts in Homeland Security.

Pace maintains three labs focusing on cybersecurity research and education. The Cybersecurity Education and Research Lab brings together faculty research and cyber defense education. Research streams include biometrics, information security management, web security, computer forensics, information technology auditing, intrusion detection, cybersecurity education, and privacy. The Applied Data and Networking Sciences Lab offers students opportunities to develop skills in cybersecurity, networking and data analytics, including preparation for CISSP and CISCO CCNA certifications. The Computer Forensics Lab focuses on research and practical experience in digital and mobile forensics.





# PENN HIGHLANDS COMMUNITY COLLEGE



The Associate of Applied Science in Information Technology: Cyber Security degree program at **Penn Highlands Community College** provides students with the ability to not only administer networks, but also to secure those networks and conduct penetration tests to ensure they are not vulnerable to attacks.

Students work closely with faculty who maintain current positions within local technology companies and perform cybersecurity work on a daily basis. Faculty affiliations also allow students to have direct contact with local organizations when pursuing internship opportunities.

Students cover aspects of the Microsoft Certified Solutions Associate (MCSA), CompTIA Linux+, Net+, Security+ and A+, Wireshark Certified Network

Analyst, and the EC-Council Certified Ethical Hacker certifications.

Cybersecurity graduates are expertly trained in computer hardware, operating systems, networking, databases, programming, and defensive and offensive security. They may enter the workforce immediately or transfer into a four-year program at colleges and universities through articulation agreements.

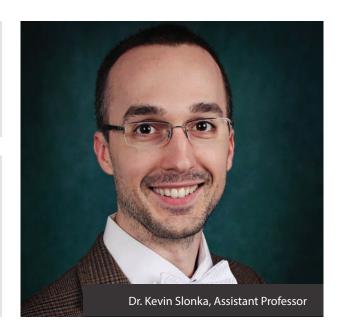
## **DESIGNATIONS**

• CAE - Cyber Defense 2-Year Education

## **CONTACT INFORMATION**

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## PENNSYLVANIA STATE UNIVERSITY



The College of Information Sciences and Technology (IST) at Penn State University is focused on solving problems and advancing opportunities that exist at the intersection of information, technology, and people. Students blend knowledge of information technologies— computer programming, discrete mathematics, database concepts, an understanding of information systems—with strong communication skills and teamwork to understand how information technologies can be used in real applications involving individuals, organizations, and national and global organizations. Faculty bring diverse professional expertise to the classroom, challenging students to think critically and work collaboratively to explore innovative solutions that lead to real-world impact. Penn State offers an undergraduate program that teaches students the skills they need to develop new technology and the role that technology will play in our lives, businesses, and the world. Students

will be challenged to think critically to solve problems using technology in a variety of contexts. Our programs include a set of courses that provide an understanding of the theories, skills, and technologies associated with network security, cyber threat defense, information warfare, and critical infrastructure protection across multiple venues. Penn State offers two cybersecurity-related certificates: a certificate of recognition and a certification of achievement. Any student who graduates with a major or minor in Security and Risk Analysis, or from the IST Masters program, receives a certificate of recognition. Students who completed the courses as required for the CAE designation receive a certificate of achievement noting their accomplishment. Both certificates verify that the student graduated from an institution and program whose faculty, curricula, and commitment were evaluated and found to be of high quality as defined by the NSA/DHS requirements.

### **DESIGNATIONS**

CAE - Cyber Defense Education

## **CONTACT INFORMATION**

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## PIKES PEAK COMMUNITY COLLEGE



Pikes Peak Community College's cybersecurity degree program prepares people for the Cisco Certified Network Associate Security (CCNA Security) certification test or the Computing Technology Industry Association Security+ (CompTIA Security+) certification test. Students can then pursue careers as cybersecurity analysts, information systems security engineers, systems design engineers, and more. Easy job placement and a starting salary of \$60,000 a year make this a solid career path. With two new cyber labs at its Rampart Range and Centennial Campuses and an additional cybersecurity lab facility at the Catalyst Campus, PPCC has the capacity to provide affordable, hands-on training to 75 qualified students at a time.

In addition, PPCC's hands-on, non-credit cybersecurity courses are designed to teach experienced hobbyists and IT professionals all they

### **DESIGNATIONS**

CAE – Cyber Defense 2-Year Education

## **CONTACT INFORMATION**

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ppcc.edu/cyber-defense-center

need to know to pass the Network+, Security+ and Certified Ethical Hacker (CEH) exams, the industry standards for anyone wanting to work in cybersecurity. Using brand new cybersecurity ranges, students work through realistic scenarios in the lab. With costs far less than most test-prep boot camps, the PPCC fast-track courses do not count toward a college degree but do come with a voucher to take the industry certification exam at no additional charge.

As part of our effort to become an NSA- and DHS-designated Center of Academic Excellence for Cyber Defense Education, PPCC is now part of both CyberWatch West (CWW), a group of universities and colleges interested in cyber defense and cybersecurity and the National CyberWatch Center, a consortium of higher education institutions, businesses, and government agencies focused on collaborative efforts to advance information security education and research and strengthen the national cybersecurity workforce. PPCC is also a member of the Department of Homeland Security (DHS) Stop.Think.Connect. Campaign.





## POLYTECHNIC UNIVERSITY OF PUERTO RICO





In June 2015, Polytechnic University of Puerto Rico (PUPR) was re-designated as a National Center of Academic Excellence in Cyber Defense (CAE-CD) until the year 2020, complying to the new standards. PUPR is one of the few HSI's to be re-designated as a CAE-CD and the only one in the island of Puerto Rico. The Institution hosts a competitive Master of Science in Computer Science with a track in Cybersecurity. The Bachelor of Science in Computer Science and the Bachelor of Science in Computer Engineering also offer tracks in cybersecurity. PUPR hosts two graduate cybersecurity certificates: a Graduate Certificate in Information Assurance and Security, and a Graduate Certificate in Digital Forensics. All of these programs service a large, mainly Hispanic, under represented student population. A group of ten students from the PUPR NSF-SFS CyberCorps® program won first place at the international Capture the Flag (CTF) competition called Cyber Fire,

sponsored by Lawrence Livermore National Laboratory (LLNL). Over 100 universities in the United States and other countries participated. The SFS Scholarship Program at PUPR is supporting 20 graduate students over a five-year period (2016-2020) to increase research and improve education in technology areas relevant to information assurance and cybersecurity. The program engages students in professional experiences such as internship workshops and research and development. To enrich their academic experience even more, the program also involves them in outreach events and synergistic interactions through various activities in information assurance and cybersecurity such as boot camps, job fairs, symposiums, community outreach, and other SFS sponsored activities. The program helps to increase the number of qualified students entering the fields of information assurance and cybersecurity to protect and defend the cyberspace.

#### **DESIGNATIONS**

CAE - Cyber Defense Education

## **CONTACT INFORMATION**

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## PORTLAND COMMUNITY COLLEGE



Portland Community College (PCC) is designated as a Center of Academic Excellence in Cyber Defense. Cybersecurity is infused throughout PCC's Computer Information Systems (CIS) program. Students are encouraged to develop a security mindset. As part of their CIS coursework, PCC students can earn a Cybersecurity Fundamentals certificate that aligns with the CAE Knowledge Units. The program encourages students to participate in National Cyber League competitions where they engage in defensive and offensive puzzle-based challenges. Faculty consistently participate in the annual Community College Cyber Summit where they learn how to best prepare students for jobs in the field.

**PCC Cybersecurity Practices** 

The college's Chief Information Officer sits on the President's executive leadership team to assure that

information security is a strategic, college-wide priority. PCC uses cyber road maps with accountability measures to help the institution embrace the urgency of cybersecurity. The cyber roadmaps clarify a unified vision and provide benchmarks to monitor how well PCC is doing and what needs improvement.

In addition, there has been an intentional focus on people and education – from engagement of the Board of Directors, President and executive leadership to campaigns targeted at students, faculty, and staff. The college actively promotes awareness of security issues among both students and staff each October during Cyber Security Awareness Month.

## **DESIGNATIONS**

CAE – Cyber Defense 2-Year Education

## **CONTACT INFORMATION**

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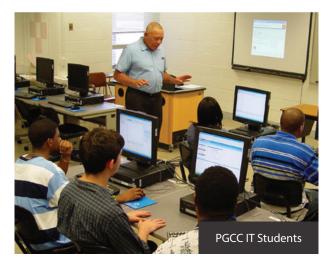


## PRINCE GEORGE'S COMMUNITY COLLEGE



The Cybersecurity program at **Prince George's** Community College provides the broad-based knowledge and skills necessary to prepare students for work as security analysts and administrators. Program topics include, but are not limited to the following: threats and vulnerabilities, governance, risk, compliance, legal and ethical issues, identity and access management, physical security, security engineering, fundamentals of cryptography, security testing, and security operations. Students also complete a capstone project that includes designing and implementing an information security system. Students completing this degree and related certificate program(s) will also be able to use their demonstrated knowledge and skills to prepare for industry recognized certifications. Students planning to pursue a bachelor's degree in Cybersecurity or related programs (Information Technology,

Information Systems) at area four-year institutions can also take advantage of a number of articulation agreements.



## **DESIGNATIONS**

• CAE-Cyber Defense 2-Year Education

## **CONTACT INFORMATION**

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pgcc.edu/programs-courses/ program-finder/cybersecurity-aas





## PUEBLO COMMUNITY COLLEGE



The National Security Agency and Department of Homeland Security have designated **Pueblo Community College** a National Center of Academic Excellence in Cyber Defense Education (CAE-2Y) for its cybersecurity program. The designation makes PCC the lone two-year accredited program in southern Colorado. "This designation is the culmination of years of dedication to training, development, education, and promotion of the cybersecurity discipline at PCC," said Jennifer Sherman, dean of business and advanced technology. "We are proud to be a leader in this field as we address the workforce demand and talent pipeline for business and industry."

Tim Gama, director of PCC's cybersecurity program, spent the past year completing the accreditation process. PCC's existing program had to meet

stringent criteria to be approved.

"I was so pleased when told that the college had been awarded this distinguished accreditation," said PCC President Patty Erjavec. "I could not be more proud of Tim and his fine efforts to move our cybersecurity program to this level."

Students who complete PCC's 60-credit program will receive an Associate of Applied Science degree in Networking Cybersecurity and will be prepared to test for certification in several areas. They will be able to enter the workforce immediately upon graduation or transfer to a four-year program "We're training today for jobs not yet created," Gama said. "With this designation, the industry will recognize that our students are trained and ready for the cyber industry."

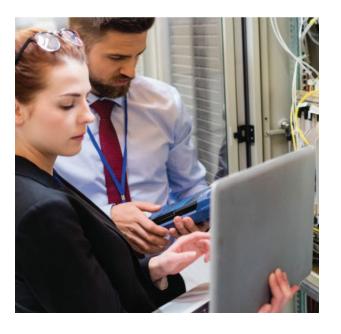
## **DESIGNATIONS**

• CAE - Cyber Defense 2-Year Education

## **CONTACT INFORMATION**

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## PURDUE UNIVERSITY NORTHWEST



#### Purdue University Northwest (PNW) is a

student-centered university that values academic excellence, supports growth, and celebrates diversity. Located near Chicago in northwest Indiana, PNW fosters a vibrant academic community through high quality and engaging undergraduate and graduate education.

The PNW College of Technology partners with business, industry, and government to give students opportunities to solve real-world problems, leading to internships and jobs. The majority of our courses are application-oriented and include laboratories with state-of-the-art equipment. The CAE path, BS in Computer Information Technology (CIT) undergraduate program, is accredited by the Computing Accreditation Commission of ABET. The curriculum is designed to follow IEEE/ACM

curriculum guidelines, and courses are implemented with extensive hands-on activities and lab practices. Students are prepared with knowledge, skills, and abilities that can be mapped to multiple NICE Work Role Categories (Protect and Defend, Analyze, Operating and Maintain, Secure Provision). The CIT program enrollment is over 220 undergraduate and 30 graduate students.

Additional workforce development is supported through a CyberCorps® Scholarship for Service program sponsored by NSF which prepares highly qualified cybersecurity professionals to be placed in government agencies. CIT faculty members and students are actively engaged in applied research and sponsored projects, including but not limited to cyber-physics system security, machine learning in cybersecurity, IoT system security and GenCyber.

## **DESIGNATIONS**

• CAE - Cyber Defense Education

## **CONTACT INFORMATION**

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## RED ROCKS COMMUNITY COLLEGE



Red Rocks Community College (RRCC) is a fully accredited, public, two-year college established in 1969. Today, RRCC is known for its commitment to open access, learner-centered instruction, academic excellence, and community connections. Located ten miles due west of Denver, Colorado, RRCC offers more than 250 programs and 650 courses leading to two-year degrees, professional certificates, a Bachelor's of Applied Science, and a Master's in Physician Assistant Studies. RRCC's two campuses in Lakewood and Arvada serve the more than 600,000 residents of four counties - Jefferson, Park, Clear Creek, and Gilpin - and approximately 8,000 students enroll at RRCC each semester. Of all the students enrolled, over 60% are upgrading job skills by taking classes related to their professions.

department is known for innovative programs that are designed to help students enter the job market. In 1998, RRCC became one of the first Cisco Academies in Colorado. In 2000, it became one of the first Microsoft IT Academies in the country. In 2016, RRCC became the first Center of Academic Excellence in Cyber Defense Two-Year Education (CAE-2Y) in the State of Colorado. RRCC has a growing Cybersecurity Student Club that competes in the annual Rocky Mountain Collegiate Cyber Defense Competition. They also give back to our community by mentoring local junior and senior high school students in the annual Cyber Patriot Competition.

The RRCC Computer Information Technology (CIT)

## **DESIGNATIONS**

• CAE - Cyber Defense 2-Year Education

## CONTACT INFORMATION

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## REGENT UNIVERSITY



**Regent University** was named as a National Center of Academic Excellence in Cyber Defense Education (CAE-CDE) by the National Security Agency (NSA) and the Department of Homeland Security (DHS). According to the latest data published by NICE (National Initiative for Cybersecurity Education, 2018), Regent is among only four percent of universities in the United States to receive this merit.

"This certification from the NSA and the DHS is an important step toward equipping the next generation of cybersecurity professionals with the highest level of training available," said Dr. M.G. "Pat" Robertson, Regent founder, chancellor, and CEO.

The CAE-CDE designation is awarded to regionally accredited two-year, four-year, and graduate level institutions in the United States who are committed to creating cybersecurity programs to train students

who will defend America's cyberspace. Regent was granted the designation after an intensive, three-year review. It comes less than one year after the launch of its state-of-the-art cyber range, the first of its kind at a private university in the United States. The cyber range trains students at the bachelor's and master's level as well as offers C-Suite and industry certification training for professionals seeking to combat today's dynamic threat environment.

"This recognition is a tribute to excellence. It recognizes Regent as a key player in cybersecurity education, not only in Virginia but in our nation," said Regent's College of Arts & Sciences Engineering & Computer Sciences professor and department chair, Cheryl Beauchamp.

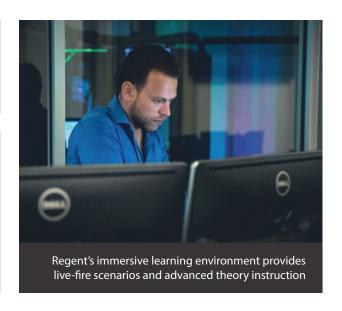
### **DESIGNATIONS**

CAE – Cyber Defense Education

## **CONTACT INFORMATION**

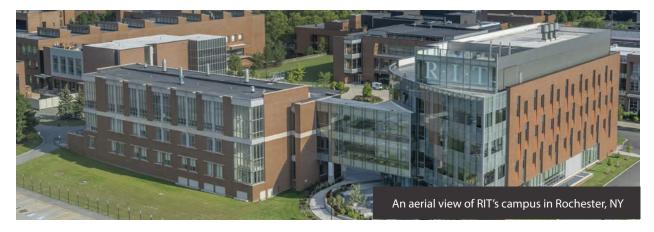
Cheryl Beauchamp (757) 352-4772 cherbea@regent.edu

regent.edu/engineering-computer



## RIT

## ROCHESTER INSTITUTE OF TECHNOLOGY



Established in 2012 as one of the first academic units in the nation of its kind, the **Computing Security Department at RIT** consists of 16 full-time faculty members and six extended faculty members. The department has approximately 400 students pursuing a Bachelor of Science in Computing Security, 60 students pursuing a Master of Science in Computing Security, and 10 Ph.D. students with a research focus in cybersecurity. RIT has been designated as a CAE-CDE since 2006 and a CAE-R since 2017. CAE designations have propelled the rapid growth of computing security research and education programs at RIT. Student teams at RIT have won the Northeast Collegiate Cyber Defense Competition a total of seven times, and in 2013 they won the national title. RIT is one of the primary universities that offer the NSF CyberCorps® Scholarship.

In 2015, RIT established the first National Collegiate Pentesting Competition. The competition has rapidly grown to comprise three regionals, involving teams from more than 30 colleges and universities nationwide, and will expand to international regions.

In 2016, RIT designated cybersecurity as one of four signature multidisciplinary research areas with a strategic investment of \$2 million. Today, with support from a historic donation from alumnus Austin McChord, and a New York State HeCap grant, RIT is building a state-of-the-art facility to host Computing Security degree programs and the Center for Cybersecurity. Experts at RIT are devoted to educating the next generation of highly skilled cybersecurity professionals who will protect our nation's vast cyber infrastructures and digital assets from constant attacks conducted by our adversaries.

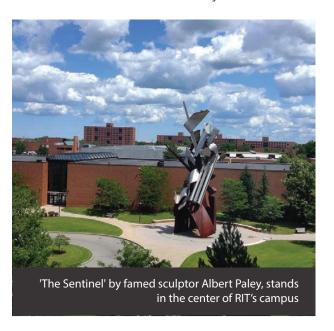
## **DESIGNATIONS**

- CAE Cyber Defense Education
- CAE Cyber Defense Research

## **CONTACT INFORMATION**

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rit.edu/cybersecurity





## ROCKLAND COMMUNITY COLLEGE



#### **Rockland Community College, State University of**

**New York**, offers a safe, supportive learning environment for thousands of students from diverse backgrounds. RCC has become first choice for parents and students. Our award-winning faculty works closely with students to ensure their success, and we have numerous student services to help students meet their goals. RCC also serves as a unique and important resource for the community. Our cultural offerings attract thousands of community members, and the business community turns to RCC for workforce training and development.

RCC has a longstanding commitment to cybersecurity education. Rockland was the first community college in the SUNY system to have its courses certified as mapping to the Committee on National Security Systems NSTISSI Standard 4011 in 2008, and were the first to offer a degree in local area networking in 1996.

**DESIGNATIONS** 

CAE – Cyber Defense 2-Year Education

**CONTACT INFORMATION** 

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bit.ly/2TKN7Ob

In 2017, RCC became a CAE in Cyber Defense 2-Year Education as designated by the NSA and DHS. Cybersecurity graduates transfer to a range of four-year institutions and are eligible to apply for the prestigious CyberCorps® Scholarship for Service. The Cybersecurity A.A.S. degree program provides students with the technological course work needed for careers in cyber security. RCC cybersecurity courses also prepare students to enter the workforce with many industry-recognized certifications.

Cybersecurity topics are also included in other degree programs. Examples include HIPAA in Nursing and Occupational Therapy Assistant programs, information privacy topics in the Paralegal Studies program, and critical infrastructure protection in the Corporate and Homeland Security program.

The College is a CompTIA Authorized Academy, Cisco Academy, an affiliate school of the National Center for Systems Security and Information Assurance, and a member school of the National CyberWatch Center.





## ROOSEVELT UNIVERSITY



Roosevelt University, located in the heart of downtown Chicago, is a newcomer to the CAE community, having earning CAE-CD status for its Bachelor of Science in Cyber and Information Security in April 2018. Roosevelt was officially designated a National Center of Academic Excellence in Cyber Defense Education (CAE-CD) at a June 2018 ceremony in Huntsville, Alabama.

Through its Center for Cyber Security and Information Assurance (CCSIA), Roosevelt University offers a comprehensive and distinctive range of academic and community activities. The CCSIA hosts a modern cybersecurity research laboratory and an ultra-modern teaching laboratory. The CCSIA sponsors a speaker series, student employment events, and community engagement opportunities for undergraduate and graduate students. CCSIA programs promote professional certifications for

students and sponsor a nationally ranked, award-winning competition cyber team, the RU CyberZ, whose members have won gold at local, state, and national competitions.

The involvement of an industry board and alumni board in the CCSIA ensures that the center and its programs remain at the leading edge of theory, practice, and the needs of the field. Roosevelt's BS in Cyber and Information Security degree distinctly combines comprehensive technical curriculum, application, and experience with a broad contextual and historical perspective on the people involved in cyber defense. Students also have the valuable opportunity to combine a CAE-CD program with studies in other disciplines, such as politics, business, and biotechnology, where cyber defense is practiced.

### **DESIGNATIONS**

CAE – Cyber Defense Education

## **CONTACT INFORMATION**

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roosevelt.edu/centers/cyber-security





### SAINT LEO UNIVERSITY



Saint Leo University offers traditional-age undergraduates, working adults, and military veterans multiple ways to earn a degree in cybersecurity that will prepare them well for success in the field. Degree programs are available beginning at the associate degree level through the master's degree. Additionally, several degree options are available online or at various regional education centers away from the university's main campus north of Tampa, FL, including locations in Georgia, Virginia, and downtown Tampa.

Starting at the associate degree level, a learner can opt to study at the university's main campus or online. Those graduates can continue their studies and enroll in the Bachelor of Science program, offered at the main campus (on a daytime schedule or with weekend and evening classes), online, or at some centers in Georgia and Virginia. Students new

to Saint Leo (without the AA) may apply for direct admission into the four-year program as well. The most advanced degree available, the Master of Science, is similarly available at the main campus, online, in downtown Tampa, and at Virginia locations. The master's curriculum is aligned with requirements set by the National Security Agency as well as with requirements for many industry certifications.

The National Security Agency and the Department of Homeland Security have designated Saint Leo University as a National Center of Academic Excellence in Cyber Defense Education (CAE-CDE) through 2021.

Saint Leo is private, nonprofit university, founded by Catholic educators, and open to people of all backgrounds.

#### **DESIGNATIONS**

CAE - Cyber Defense Education

#### **CONTACT INFORMATION**

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saintleo.edu/center-for-cybersecurity-edu cation





### SAN ANTONIO COLLEGE





San Antonio College (SAC) is one of five public, open-enrollment community colleges that serve the city of San Antonio and 11 surrounding counties in South Central Texas. SAC is the largest single-campus community college in Texas and one of the largest in the United States, educating approximately 20,000 credit-seeking students each year. SAC serves as a Regional Resource Center for current designees and prospective Centers of Academic Excellence (CAE) institutions. SAC is one of only two community colleges in San Antonio that are designated a National Center of Academic Excellence in Cyber Defense Two-Year Education (CAE-2Y), a National Security Agency (NSA) and Department of Homeland Security (DHS).

The college's Computer Information Systems (CIS) Department – originally established as the Data Processing Department in 1953 – has held CAE-2Y certification since 2013, documenting the relevance and high quality of its Associate of Applied Science (AAS) degree in Information Assurance and Cybersecurity. CIS department courseware has been reviewed by nationally known IA subject matter experts as part of the NSA's Information Assurance Courseware Evaluation (IACE) Program and meets all of the elements of the Committee on National Security Systems (CNSS) National Training Standard for Information Systems Security (INFOSEC) Professionals (NSTISSI No. 4011) and Senior Systems Managers (CNSSI No. 4012).

#### **DESIGNATIONS**

• CAE - Cyber Defense 2-Year Education

#### **CONTACT INFORMATION**

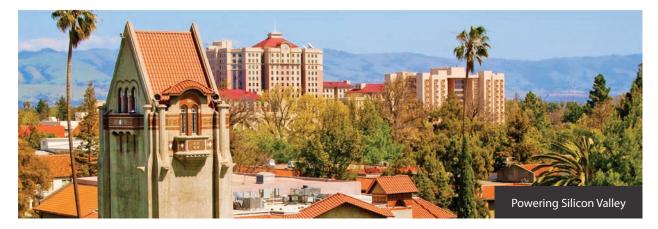
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www.alamo.edu





### SAN JOSÉ STATE UNIVERSITY



**San José State University (SJSU)** is dedicated to training cybersecurity professionals to serve the industry throughout Silicon Valley. Our goal is to grow cybersecurity capacity to match economic development in the San Francisco Bay Area.

In 2014, SJSU and Cisco Systems, Inc. jointly developed and launched a Master of Science in Software Engineering with Specialization in Cybersecurity degree. Since Fall 2017, the program has been made available to professionals and organizations throughout Silicon Valley. As of March 2019, we have enrolled 115 students in this program. Students gain hands-on experience in design, development, testing, and deployment of secure systems, as well as a solid understanding of organizational risk management and records integrity.

SJSU also provides training courses for professional cybersecurity certificates such as Certified Information Systems Security Professional, Certified Information Security Manager, and Certified Information Systems Auditor through cybersecurity training partners.

SJSU has hosted CyberAware Day in collaboration with UC Merced and industry partners for the past two years. This event is intended to increase awareness in the cybersecurity sector and related opportunities for all students, especially those from a diverse background. Industry experts with first-hand knowledge share stories of how they found their way into cybersecurity. In addition to partnering with the City of San Jose and local non-profits, SJSU engages globally with cybersecurity professionals through collaborations with Peerlyst and academic partners such as Zurich University of Applied Science.

#### **DESIGNATIONS**

CAE – Cyber Defense Education

#### **CONTACT INFORMATION**

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### SINCLAIR COMMUNITY COLLEGE



Sinclair Community College is an urban community college located in downtown Dayton, Ohio. Founded in 1887, it is one of the oldest community colleges in America. Today, it is the region's choice for post-secondary education. Sinclair Community College was first designated as a Center of Academic Excellence in Cyber Defense in 2011. Since then, Sinclair has maintained it CAE-CD designation while continually growing and advancing in the cyber field. Cyber Defense is a major focus in the Miami Valley region due to the proximity of the Wright Patterson Air Force Base, defense contractors, and strong local healthcare providers. The college offers different teaching modalities including more traditional and competency based to serve our diverse student population. Sinclair utilizes a sandbox learning environment to train students in defend against popular cyber-attacks.

In 2017, Sinclair was awarded a grant from the NSA to help build out their hands-on learning environments. Students now have the opportunity to use current enterprise level equipment. The college has invested in a new state-of-the-art facility to teach Cyber Defense and make best use of grant funded equipment. We have developed in-demand curriculum influenced by employer input and industry certifications such as CompTIA, Cisco, and Microsoft.

Many graduates of Sinclair continue their education at one of our partner universities or they enter the local cyber defense workforce. The CAE-CD designation adds credibility to our program and is highly valued in the Miami Valley Region.

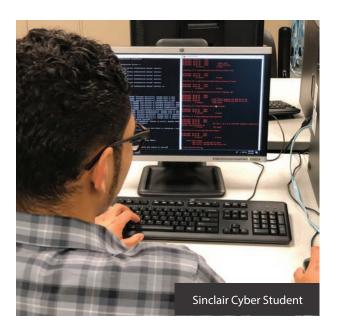
#### **DESIGNATIONS**

• CAE - Cyber Defense Education

#### **CONTACT INFORMATION**

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bit.ly/2HsaHsH





### SOUTHERN METHODIST UNIVERSITY



The **Department of Computer Science at Southern Methodist University (SMU)** offers academic programs related to security. The B.S. degree in Computer Science offers a security track option, which facilitates a more in-depth study of computer and network security issues. Students in this track cover core computer science topics, then take advanced courses that focus on security-related topics.

The M.S. Security Engineering degree covers the design and development of secure systems and applications, including security of computer networks and systems as well as physical security. In addition to the technical aspects such as cryptography, protocols and access control, the curriculum deals with the policy and management issues, integration and logistics, and budgeting. Centering on the problems

of working professionals in the critical field of security, the program in security engineering serves the needs of both full-time and part-time students.

In addition to academic programs in security, SMU also houses the Darwin Deason Institute for Cyber Security. The mission of the Institute is to advance the science, policy, application, and education of cybersecurity through basic and problem-driven, interdisciplinary research. The Institute is committed to the goal of emerging as a world-class cybersecurity research center that innovates, develops, and delivers solutions to the nation's most challenging cybersecurity problems. The underlying philosophy guiding Institute activities is based on establishing a foundational science of cybersecurity through adoption of a broad, interdisciplinary approach for solving cybersecurity problems.

#### **DESIGNATIONS**

• CAE - Cyber Defense Education

#### CONTACT INFORMATION

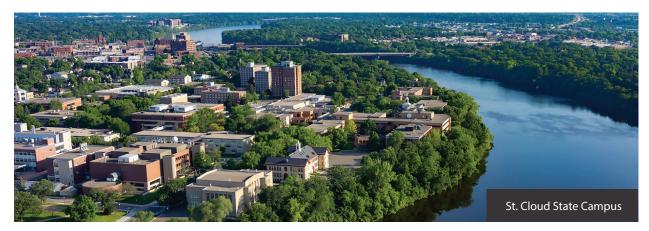
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smu.edu/Lyle/Departments/CSE





### ST. CLOUD STATE UNIVERSITY



**St. Cloud State** is one of the largest public universities in Minnesota with more than 14,000 students. The university is located northwest of Minneapolis between downtown St. Cloud and the Beaver Islands, a group of more than 30 islands that form a natural maze for a two-mile stretch of the river. The St. Cloud metropolitan area is 24th on Forbes magazine's "Best Small Places for Businesses and Careers." St. Cloud State is ranked in Forbes magazine's "America's Top Colleges." Students can choose from more than 200 majors, minors, and pre-professional programs.

The School of Graduate Studies offers more than 60 programs, including doctoral degrees in Higher Education Administration and Educational Administration and Leadership, as well as a Master of Business Administration from the acclaimed Herberger Business School.

#### **DESIGNATIONS**

CAE – Cyber Defense Education

#### **CONTACT INFORMATION**

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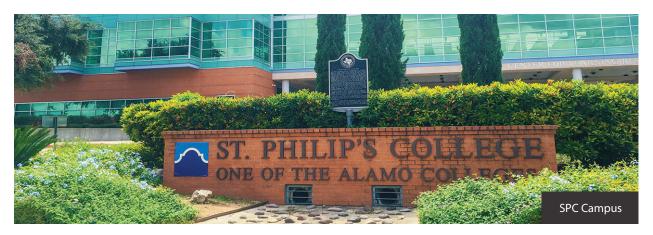
The comprehensive Master of Science Information Assurance (MSIA) program prepares students to be experts in information assurance. They are equipped with information security technologies and knowledge to protect the nation's information infrastructure, conduct advanced research, and develop skills in both management and technical areas. Students can choose the 5-Year Track Information Systems and MSIA, completing both the Information Systems undergraduate major and Master of Science in Information Assurance in five years.

Students who major in cybersecurity will find themselves working on issues with global impact in a field that continuously evolves. They'll learn to assess the security needs of a computer and network system, recommend safeguards and manage the implementation and maintenance of security devices, systems and procedures to protect it. They'll study databases and programming and the theories on computer networks and security and how to apply them to real-world problem solving. And, they'll learn to think critically and be creative and innovative in solving problems that arise in this ever-changing field.





### ST. PHILIP'S COLLEGE



**St. Philip's College**, founded in 1898, is a comprehensive public community college whose mission is to empower our diverse student population through educational achievement and career readiness.

St. Philip's College offers an Associate of Applied Science in Information Technology Cybersecurity Specialist that prepares students to design, implement, and secure computer networks. Students with this degree will be able to install security software, monitor networks for security breaches, respond to cyber-attacks, and gather data and evidence to be used in prosecuting cybercrime.

Completion in this program prepares a student for industry certifications such as CompTIA Security+, Certified Security Professional (CSP), and Certified Ethical Hacker (CEH). St. Philip's College is

designated by the National Security Agency and Department of Homeland Security as a National Center of Academic Excellence in Cyber Defense Two-Year Education. The designation covers academic years 2014 through 2020.



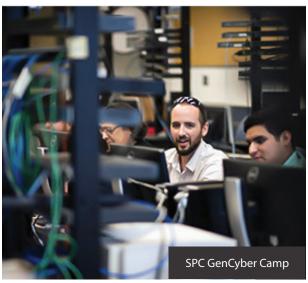
#### **DESIGNATIONS**

CAE – Cyber Defense 2-Year Education

#### **CONTACT INFORMATION**

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alamo.edu/spc





### STEVENS INSTITUTE OF TECHNOLOGY



**Stevens Institute of Technology** is a premier, private research university situated in Hoboken, New Jersey overlooking the Manhattan skyline. Since its founding in 1870, technological innovation has always been the hallmark and legacy of Stevens' education and research. Within the university's three schools and one college, 6,900 undergraduate and graduate students collaborate closely with faculty in an interdisciplinary, student-centric, entrepreneurial environment. Academic and research programs spanning business, computing, engineering, the arts, and other fields actively advance the frontiers of science and leverage technology to confront the most pressing global challenges. The university is consistently ranked among the nation's elite for return on tuition investment, career services, and the mid-career salaries of alumni.

Stevens offers a wide variety of cybersecurity focused degree programs (on the Bachelor's, Master's, and PhD levels) across all three schools. Stevens has held the designation as NSA/DHS National Center of Academic Excellence in Cyber Defense Education for its Bachelor of Science in Cybersecurity Program since 2003. In 2008, Stevens was one of the first schools to also receive the designation as NSA/DHS National Center of Academic Excellence in Cyber Defense Education.

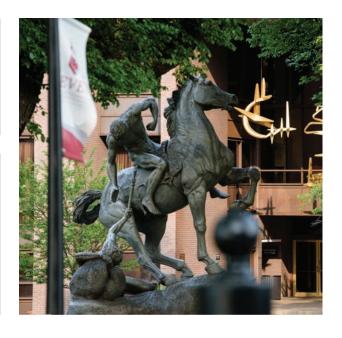
#### **DESIGNATIONS**

- CAE Cyber Defence Education
- CAE Cyber Defence Research

#### CONTACT INFORMATION

Professor Susanne Wetzel (201) 216-5610 swetzel@stevens.edu

www.stevens.edu



### Syracuse University

### SYRACUSE UNIVERSITY



Founded in 1870, **Syracuse University** is a private research university of extraordinary academics, distinctive offerings, and an undeniable spirit. Syracuse is recognized as a student-focused, global research university, renowned for academic rigor, richly diverse learning experiences, and a spirit of discovery. Orange was voted in as Syracuse University's official color in 1890. Today, orange isn't just a color—it's a way of life. Syracuse University's main campus sits on top of a hill overlooking the city of Syracuse, in central New York state.

Additional centers are located in New York City, Washington D.C., and Los Angeles, and study abroad programs are available in 60 countries throughout the world, enabling students to gain a global perspective as they pursue their studies. Infused with a strong entrepreneurial culture, the University

is home to over 30 research centers and institutes spanning disciplines from performance, design, fine arts, and humanities to information, health and social sciences, and STEM (Science, Technology, Engineering, and Mathematics) fields.

Students can choose from more than 200 majors, 100 minors, and 200 advanced degree programs across Syracuse's 13 academic units. Syracuse originally received its CAE designation in 2001 and was re-designated in 2004, 2007, and 2012. Syracuse also received its CAE-R in 2009. The University received the new designations in both Education and Research in 2014 that are effective through 2021.

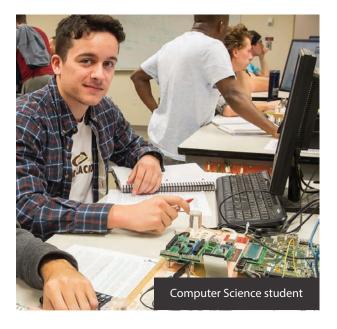
#### **DESIGNATIONS**

- CAE Cyber Defense Education
- CAE Cyber Defense Research

#### **CONTACT INFORMATION**

Dr. Joon S. Park (315) 443-6887 jspark@syr.edu

cisat.syr.edu





### TENNESSEE TECH UNIVERSITY



**CEROC**, virtually established in October 2015 and physically established in January 2016, is a Center of Academic Excellence in Cyber Defense (CAE-CDE). The center was established by the Department of Computer Science and the College of Engineering to integrate university-wide existing activities and initiatives in cybersecurity education, research, and outreach, the emphasis of which makes it unique in the state.

CEROC was awarded the CyberCorps® SFS scholarship grant in December 2015 (NSF Award# 1565562) with the title of "Tennessee CyberCorps®: A Hybrid Program in Cybersecurity." Tennessee Tech was the first university in the State of Tennessee to be awarded the opportunity to manage this prestigious scholarship and remains the largest such program in the state.

**DESIGNATIONS** 

• CAE - Cyber Defense Education

**CONTACT INFORMATION** 

Dr. Ambareen Siraj (931) 372-3519 ceroc@tntech.edu

tntech.edu/ceroc

The primary focus of the program is to graduate cyber workforce ready candidates with integrated experiences in education, research, and outreach. Tennessee Tech was one of 10 institutions in the nation to participate in the SFS community college pilot. As of 2018, CEROC also participates in the DoD Cyber Scholarship program.

CEROC supports a number of professional development, mentoring, and leadership building opportunities through the CyberEagles student cyber club and the affiliated CTF, defense, and offense cyber interest (competition) groups. The new Cyber (Eagle) Range currently underdevelopment will continue to enhance our competition, education, outreach, and research programs.

Tennessee Tech, located in Cookeville, TN, is the #1 public university in Tennessee in "Best Colleges for Your Money" by Money Magazine for the past two years. Tennessee Tech has a R2 doctoral Carnegie classification.





### TERRA STATE COMMUNITY COLLEGE



**Terra State Community College** has proudly served northwest Ohio as a leading educational institution for 50 years. We are accredited, state supported, and provide our community members educational experiences that are both accessible and affordable.

We pride ourselves in helping students reach their goals while staying true to the community college mission of providing open access to higher education. Terra State offers two degree programs, Associate of Applied Science Computer and Information Systems and Associate of Applied Science Systems and Networking Support, which map to the CAE-2Y Cyber Defense Curriculum. Both of these programs offer the following industry-level certificates integrated into our curriculum: CompTIA A+, CompTIA Security +, Cisco CCENT, Cisco CCNA Routing and Switching, CPCT- Certified Premises

Cabling Technician via the Fiber Optics Association, CFOT – Certified Fiber Optic Technician via the Fiber Optics Association, Microsoft Server Exam 70-410.

In October 2018, Terra State hosted its first Cybersecurity Educational Initiative Summit which brought keynote speaker David Kennedy, owner of TrustedSec, to our campus. Community members, industry leaders, and students came together to learn more about cybersecurity and how to protect themselves both personally and professionally. Terra State is proud to have a knowledgeable advisory board to keep the curriculum current with industry standards and offers courses which meet industry level certifications to give our students an advantage in the industry.

#### **DESIGNATIONS**

• CAE - Cyber Defense 2-Year Education

#### **CONTACT INFORMATION**

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www.terra.edu





### TEXAS A&M UNIVERSITY



**Texas A&M University** pursues teaching, research, and service at the exceptionally high levels expected of America's great universities. Seeking to advance the collective cybersecurity knowledge, capabilities, and practices, through ground-breaking research, high-impact education, and mutually beneficial partnerships, our mission is to enhance national security through research and education. Texas A&M University stands committed to making significant contributions through the development of transformational cybersecurity advancements.

**Education:** 

Texas A&M University has a long history of providing information assurance and cybersecurity education, dating back to the mid-1990s. Today, in our undergraduate and graduate programs, students have an increasing number of interdisciplinary, high

impact, and innovative opportunities available to expand their cybersecurity knowledge and skills. Our students upon graduation are prepared for the challenges they will face in their personal and professional lives.

#### Research:

As one of the world's leading research institutions, and one of only 17 institutions to hold the triple designation as a land-grant, sea-grant, and space-grant institution, Texas A&M is at the forefront in making significant contributions to scholarship and discovery, including that of science and technology. With world-class researchers and state-of-the art facilities, we are leaders in cybersecurity innovation. The combination of great faculty, great facilities, and great students ensures that A&M is moving to the forefront of cybersecurity research and education.

#### **DESIGNATIONS**

- CAE Cyber Defense Education
- CAE Cyber Defense Research
- CAE Cyber Operations

#### **CONTACT INFORMATION**

Dr. Daniel J. Ragsdale (979) 845-7398 rags@tamu.edu

cybersecurity.tamu.edu





### TEXAS A&M UNIVERSITY CORPUS CHRISTI



#### Texas A&M University-Corpus Christi is an

expanding, doctoral-granting institution committed to preparing graduates for lifelong learning and responsible citizenship in the global community. We are dedicated to excellence in teaching, research, creative activity, and service, offering more than 80 of the most popular degree programs in the state.

Texas A&M University-Corpus Christi has been ranked among the Top 50 Colleges for Hispanics Students by Best Colleges (www.bestcolleges.com). The University ranked 10th in the state of Texas and 37th in the nation the best university for Hispanic students. These rankings were based on academic quality, affordability, and online competency in 2018. The Department of Computing Sciences offers Bachelor in Computer Science, Master in Computer Science and Geographic Information Science, and Doctor of Philosophy in Geospatial Computing.

To complete a Bachelor of Computer Science degree with the Cybersecurity and Infrastructure concentration, students must complete 40 credit hours of Computer Science courses and 39 credit hours of Cybersecurity related courses. The majority of the cybersecurity courses emphasize hands-on activities, where students learn to use open source and commercial applications. The program prepares students to obtain industrial certificates in cybersecurity and internship program helps students to gain valuable experience in the real world. The Cyber Defense Team (student organization) teaches its members offensive and defensive security tactics from beginner to expert level. The team prepares and recruits students to participate in cybersecurity competitions. In the past, students have participated in the National Cyber League, Panoply, MITRE Cyber Challenge, and CAHSI Hackathon.

#### **DESIGNATIONS**

CAE – Cyber Defense Education

#### **CONTACT INFORMATION**

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cyberdefense.tamucc.edu





## TEXAS STATE TECHNICAL COLLEGE



Texas State Technical College (TSTC) is a coeducational, two-year institution of higher education offering courses of study in technical-vocational education for which there is a demand within the State of Texas. TSTC strengthens Texas with a highly skilled, technically-competent workforce through 10 campuses across the state. TSTC is accredited by the Southern Association for Colleges and Schools Commission on Colleges (SACSCOC).

The Computer Networking & Security Technology (CNST) Program is available at the Harlingen campus in the Rio Grande Valley. The focus of the program is the implementation and protection of computer system networks. Students in the program gain the skills/knowledge required to prevent, defend, detect, and respond to cyberattacks and

threats. They are trained to install and configure network devices, end-user workstations/devices, and virtualized network servers that control, monitor, or provide user services on internal or external networks. CNST is designated as a NSA/DHS National Center of Academic Excellence in Cyber Defense Two-Year Education (CAE-2Y) [2018-2023].

#### **DESIGNATIONS**

• CAE - Cyber Defense 2-Year Education

#### **CONTACT INFORMATION**

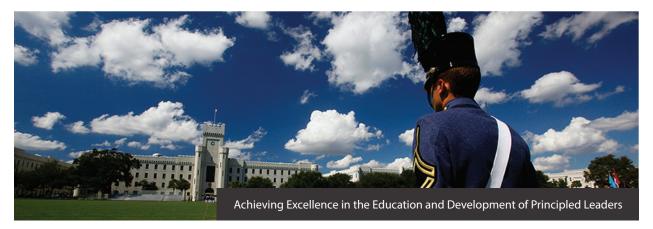
Norma Colunga-Hernandez (956) 364-4774 ncolunga-herna@tstc.edu

www.tstc.edu





### THE



#### The Citadel, The Military College of South Carolina

is a landmark in Charleston and South Carolina that is noted for its educational reputation as well as its rich history. Founded in 1842, The Citadel has an undergraduate student body of about 2,300 students who make up the South Carolina Corps of Cadets. Another 1,000 students attend The Citadel Graduate College, a civilian evening and online program that offers graduate and professional degrees as well as undergraduate programs.

The Citadel has been designated as a National Center of Academic Excellence in Cyber Defense Education (CAE-CDE) in 2016. The Citadel offers a B.S. in Computer Science with a minor in Cybersecurity which is the academic path for CAE-CDE.

The Citadel established Center for Cyber, Intelligence and Security Studies to promote education, research and outreach in cybersecurity, intelligence. and national security. The Citadel also offers an undergraduate minor in cyber inter-disciplinary studies and a graduate certificate in cybersecurity (jointly with College of Charleston).

The Citadel hosted GenCyber Camps for Middle/High School Teachers in 2016 and for Middle/High School Students in 2018. Students at The Citadel formed Cybersecurity Club and The Citadel Cyber Defense Team participates in different Cyber Defense Contests.

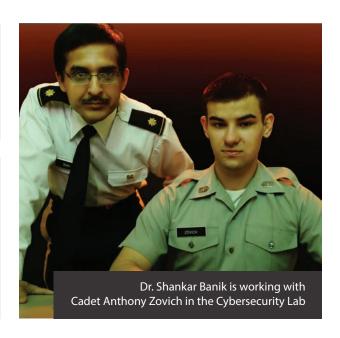
#### **DESIGNATIONS**

CAE - Cyber Defense Education

#### **CONTACT INFORMATION**

Dr. Shankar M. Banik (843) 953-5039 shankar.banik@citadel.edu

citadel.edu/root/cciss





### THOMAS NELSON COMMUNITY COLLEGE



Since 2002, **Thomas Nelson Community College** has proudly provided cybersecurity training to the Virginia Peninsula. From certificate attainment to degree alignment, we provide career pathways for the Peninsula's cybersecurity professionals. Thomas Nelson strives to enable students to graduate high-demand skills and content knowledge and establish additional cyber business-education partnerships.

In order to accomplish this, we host cybersecurity conferences addressing cyber threats, malware, forensics, mitigation, industrial control systems, new technologies, governance, regulations, and compliance and business/higher education issues, as well as maintain strategic partnerships with Cyber Watch, InfraGard, Armed Forces Communications Electronics Association, International Information

Systems Security Certifications Consortium, Information Systems Security Association, and the HR Cyber Alliance.



#### **DESIGNATIONS**

• CAE - Cyber Defense 2-Year Education

#### **CONTACT INFORMATION**

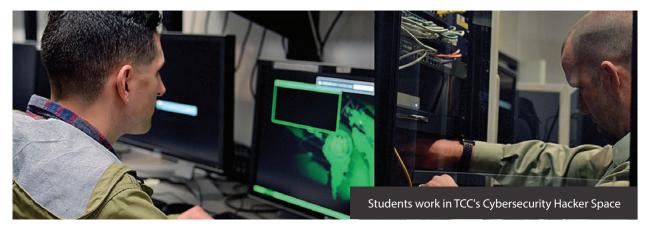
(757) 825-2937 wtce@tncc.edu

tncc.edu/cybersecurity





### TIDEWATER COMMUNITY COLLEGE



**Tidewater Community College** of Virginia has been designated a National Center of Academic Excellence in Cyber Defense Two-Year Education (CAE-2Y) by the National Security Agency and the Department of Homeland Security.

TCC's Cybersecurity program is designed to promote higher education in Cyber Defense (CD) and prepare a growing number of cybersecurity professionals to meet the national demand for cyber defense education and to protect the national information infrastructure to reduce vulnerabilities in the Nation's networks. Since its inception, TCC's network security/cybersecurity curriculum has been aligned with national standards for cybersecurity established and maintained by National Institute for Standards and Technology (NIST) and the NSA.

Our A.A.S degree is transferable and offers students the opportunity to participate in competitions and extracurricular activities that sharpen skills and knowledge and provide networking opportunities.

TCC hosts a Hacker Space which is a full penetration testing lab designed to facilitate learning about the practical side of vulnerability assessments and penetration testing in a safe environment. The lab utilizes a virtualized platform to provide vulnerable and mis-configured hosts, domain controllers, web servers, mail servers, firewalls, web applications, and many more systems, services, and applications. Students are able to practice their offensive and defensive cybersecurity skills in a safe, isolated, sandbox environment that encourages freedom to experiment.

#### **DESIGNATIONS**

• CAE - Cyber Defense 2-Year Education

#### CONTACT INFORMATION

Bill Clement (757) 822-7124 wclement@tcc.edu

tcc.edu/cybersecurity





### TOWSON UNIVERSITY



The **Department of Computer and Information Sciences at Towson University** started one of the first undergraduate cybersecurity programs in the nation and the first in Maryland.

The National Security Agency and Department of Homeland Security designated Towson University as a National Center of Academic Excellence in Cyber Defense Education in 2002 and in Cyber Operations in 2013. TU is one of the few institutions in the nation to receive the NSA/DHS Cyber Operations designation. The Accreditation Board for Engineering and Technology (ABET) has accredited Towson University's cyber operations track in the computer science B.S. degree program until 2024. This makes our program one of the first four ABET accredited cybersecurity programs.

The department has received cybersecurity grants

**DESIGNATIONS** 

- CAE Cyber Defense Education
- CAE Cyber Operations

#### **CONTACT INFORMATION**

Sidd Kaza, Ph.D. (410) 704-2633 skaza@towson.edu

www.towson.edu/cyber

from the National Science Foundation, Department of Defense, Army Research Lab, and several other federal and state agencies. From our award-winning Cyber Defense team to our CyberCorps® scholarships for cybersecurity students and our cybersecurity programs available at the undergraduate and graduate levels, Towson University allows you to receive the education you need to succeed in the field.

All students in the department are in an environment that provides extra-curricular opportunities in cybersecurity. We have monthly cybersecurity seminars with invited speakers from industry and government, an active Cyber Defense Club, and a Cyber Defense Team that has been ranked first in mid-atlantic Collegiate Cyber Defense Competitions and ranked at the national CCDC. Faculty at Towson are working on cutting-edge federally funded cybersecurity research on the smart grid, wireless networks, cyber-physical systems, and social networks.





### **TUSKEGEE UNIVERSITY**



**Tuskegee University** is a private, historically black university (HBCU) located in Tuskegee, Alabama. Over the past 138 years since it was founded by Booker T. Washington in 1881, Tuskegee University has become one of our nation's most outstanding institutions of higher learning. The Brimmer College of Business and Information Science is deeply rooted in Tuskegee University's historical mission.

The Center of Information Assurance Education (CIAE) at Tuskegee University (TU) is housed within the Computer Science Department at the College of Business and Information Science. The CIAE at TU was initially designated as a National Center of Academic Excellence in Information Assurance Education (CAE-IAE) by NSA/DHS in 2012, and was re-designated as National Center of Academic Excellence in Cyber Defense Education (CAE-CDE) by DHS/NSA in 2017.

CIAE at TU serves as organizing body to offer resources and assistance for faculty, students, and community in conducting teaching, research, and other activities in information assurance. The major accomplishments include the computer science department launch of an inter-disciplinary master program in Information Systems and Security Management (MS-ISSM), which is designed to fill current and future needs for information assurance and cyber defense professionals. With the efforts of the CIAE, the university was awarded the CyberCorps®: Scholarship for Service (SFS) funded by the NSF to strengthen the national cybersecurity workforce for a period of five years beginning in 2017.

Tuskegee University is very committed to Information Assurance/Cyber Defense program of education, research, and outreach because of the crucial nature of cybersecurity for the nation.

#### **DESIGNATIONS**

CAE – Cyber Defense Education

#### **CONTACT INFORMATION**

Dr. Fan Wu (334) 727-8362 fwu@tuskegee.edu

tuskegee.edu/about-us/centers-of-excellence





### UNIVERSITY OF ADVANCING TECHNOLOGY



#### **Bachelor of Science in Network Security**

A US Government Recognized Cyber Security
Degree for Ethical Hackers

UAT's Network Security Bachelor of Science is a cybersecurity degree that prepares students to take on the ever-evolving world of online theft and corruption. Our cybersecurity degree combines essential and best of class elements of software and network programming and network security analysis. This degree is designed around the contemporary skills and advanced tools associated with security for information network technology initiatives.

Designated as a National Center of Academic Excellence in Cyber Defense by the NSA and DHS National IA Education and Training Program (NIETP), UAT offers an ethical hacking degree that's highly recognized by industry and government entities alike.

#### The Highest Standard of Ethical Hacking

The focus of this cybersecurity degree is creating ethical hackers and network security professionals who will have mastery in ethical hacking, upholding to the highest industry standard of integrity over the quickly evolving world of technology and online security. Network security initiatives are becoming increasingly vital to the well-being of the general population and all business and government organizations. Graduates with UAT's network security degree will be prepared for careers with government entities and multinational corporations seeking certified ethical hacking professionals. With the completion of this NSA designated network security degree, you will gain the ability to protect and defend commerce and culture against the online world of theft and corruption.

#### **DESIGNATIONS**

CAE - Cyber Defense Education

#### **CONTACT INFORMATION**

Greg Miles (602) 383-8228 gmiles@uat.edu

www.uat.edu/network-security-degree





### UNITED STATES AIR FORCE ACADEMY



The United States Air Force Academy isn't just a premier higher-education establishment. It's an unparalleled academic and military institute that provides cadets with rewarding opportunities to transform into the leaders of tomorrow. Our mission is to educate, train, and inspire men and women to become leaders of character, motivated to lead the United States Air Force in service to our nation. From day one, cadets undertake a rigorous but rewarding program of academic, military, athletic, and character development. The academic experience balances science, technology, engineering, and mathematics (STEM) with arts and humanities. Our robust core curriculum places cadets at the intersection of these disciplines, generating opportunities to cultivate and apply creative and complex problem-solving abilities and offering opportunities to complete cutting-edge research. It's life at a different altitude.

The Department of Computer and Cyber Sciences offers two ABET-accredited undergraduate majors computer science and cyber science. Computer science emphasizes computing theory and software engineering; cyber science focuses on networks, computer forensics and cyber operations. Integrated throughout the curriculum is CyberCity, a 1:87 scale city with SCADA-controlled residential, industrial, and military infrastructure, allowing cadets to experience the kinetic impacts of cyber operations. The USAFA cyber science major was the first in the world to achieve ABET accreditation. Supporting the academic program is the Academy Center for Cyberspace Research, which conducts customer focused research and development in conjunction with industry partners in systems security, artificial intelligence and autonomous systems, immersive environments, and process automation.

#### **DESIGNATIONS**

- CAE Cyber Defense Education
- CAE Cyber Operations

#### **CONTACT INFORMATION**

HQ USAFA/DFCS (719) 333-3590 DFCS.exec@usafa.edu

usafa.edu/department/computer-science





### UNIVERSITY OF ALABAMA AT BIRMINGHAM



University of Alabama at Birmingham (UAB) takes a holistic approach to studying the nuts and bolts of cyber attacks and building transformative solutions that can prevent, detect, and recover from these attacks. Our research focuses on technologies, applications, and theoretical foundations of cybersecurity, with focus on network security, mobile device security, wireless security, applied cryptography, cryptocurrency, cloud security, user-centered security, quantum resistant cryptography, software security, digital forensics, and criminal investigations.

We make a multi-disciplinary perspective of solving security problems, exemplified by our ongoing collaboration between Computer Science, Criminal Justice, Psychology, School of Medicine and School of Health professions. Our faculty plays a leadership role in University-wide cybersecurity initiatives, and

**DESIGNATIONS** 

• CAE - Cyber Defense Research

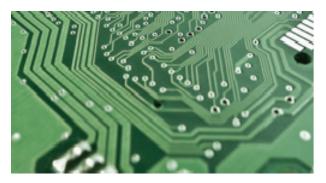
**CONTACT INFORMATION** 

Yuliang Zheng, Ph.D. (205) 934-8657 yzheng@uab.edu

thecenter@uab.edu

has a history of transitioning its research into practice through start-ups. Our research is well-integrated with UAB's other disciplines and with our many academic programs, including BS in Computer Science, BS in Digital Forensics, MS in Cyber Security, MS in Data Science and PhD in Computer Science. Our research has been funded by federal agencies and industry partners alike and has been widely recognized by international peers as well as industries. Because of this recognition, we have been invited to serve on the organizing and technical program committees of top tier conferences, advisory boards of industries, and government agencies. Some of our research outcomes have been incorporated into international standards for cybersecurity, while others are mentioned in widely used textbooks in cybersecurity.

We are a recipient of NSF CyberCorps® SFS grants to train highly skilled cybersecurity professionals for federal and state governments. Graduates from our academic programs, especially our Masters and PhD programs, have been contributing significantly to the cybersecurity of government agencies at all levels and private businesses including Visa, Microsoft, and Google.





### UNIVERSITY OF ALABAMA IN HUNTSVILLE



Since 2007, the **University of Alabama in Huntsville (UAH)** has been designated as a National Center for Academic Excellence (CAE), receiving the designation in the area of Information Assurance Education. Currently a CAE both in Cyber Defense and in Research, the university offers numerous cybersecurity-related degrees on the undergraduate and graduate levels in the fields of computer science (B.S., M.S., and PhD), computer engineering (B.S., M.S., and PhD), and information systems (B.S. and M.S.).

In 2019, UAH expanded its offerings to include the state's first Bachelor of Science in Cybersecurity. Students in this program learn to identify and mitigate computing system vulnerabilities and apply security principles and practices as well as the implementation of the physical, software, and human component of systems. This interdisciplinary approach provides students with a thorough

understanding of modern computing systems from a hardware and software perspective.

The Center for Cybersecurity Research and Education (CCRE) at UAH leverages its partnerships with government entities and local industry to provide students with hands on experience through sponsored research. Projects include SCADA security, physical and digital navigational lock cyberthreat modeling, and risk/supply chain assessments. The center supports the National Science Foundation's Scholarship for Service and DoD CySP. Additionally, the center advances cybersecurity education through curriculum development projects, GenCyber camps, and its Cyber Force Incubator.

#### **DESIGNATIONS**

- CAE Cyber Defense Education
- CAE Cyber Defense Research

#### **CONTACT INFORMATION**

Dr. Tommy Morris (256) 824-4782 tommy.morris@uah.edu

uah.edu/ccre





## THE UNIVERSITY OF ARIZONA



The Information Assurance and Security Education Center (IASEC) in the Eller College of Management at the University of Arizona promotes cybersecurity through education, training and research.

Designated as a National Center of Academic Excellence in Cyber Defense Research and Education, IASEC offers faculty, students, and the community resources to study and address the cyber vulnerabilities of our nation's information infrastructure. The IASEC team works collaboratively to promote responsible information and cybersecurity practice through curriculum development, industry partnerships, cutting-edge research, and outreach.

One component of IASEC is the Master's in Cybersecurity program. Graduates of the Master's in Cybersecurity program will understand how to prevent, monitor, and respond to data breaches and

**DESIGNATIONS** 

CAE – Cyber Defense 2-Year Education

**CONTACT INFORMATION** 

Lance Hoopes (520) 621-2385 iasec@eller.arizona.edu

eller.arizona.edu

cyberattacks. The University of Arizona's online MS in Cybersecurity enables you to bolster your technical and analytical skills, all from the convenience of your home or office.

The program is designed for working IT, engineering, and other professionals who have three years of work experience and want to boost their skills for a cybersecurity career path.

Designed specifically for those with technical experience, the degree focuses on effectively applying analytical and critical thinking to plan and execute security measures to shield an organization's computer systems, networks, and networked devices from infiltration and cyberattacks.

Students engage in theoretical and hands-on approaches to learning the critical components of cybersecurity. Cybersecurity courses cover topics such as business analytics, cyber threat intelligence, information security, risk management, systems security management, penetration testing, network security, and system cybersecurity engineering.





### UNIVERSITY OF ARKANSAS



The University of Arkansas was designated as a National Centers of Academic Excellence in Information Assurance Research in 2012 and again in 2014 when the designation was modified to National Centers of Academic Excellence in Cyber Defense Research. The mission of the center is to promote education and research in the field of computer security and information assurance at the University of Arkansas.

The activities of this center include, but are not limited to, fostering multidisciplinary research, securing large-scale funding from federal, state, and other funding agencies, providing education and training to the future workforce, and increasing awareness in the field of information security and reliability by offering appropriate seminars and workshops.

The following faculty members are part of the center:

- Brajendra Panda, Center Director (cybersecurity/database security)
- David Andrews (architecture security)
- *Paul Cronan* (ethical behavior/academic integrity)
- Jia Di (asynchronous integrated circuit design and hardware security)
- *Miaoging Huang* (cloud security)
- Qinghua LI (cybersecurity and privacy)
- Dale Thompson (wireless systems security and network security)
- Xintao Wu (cybersecurity and privacy)

#### **DESIGNATIONS**

• CAE - Cyber Defense Research

#### CONTACT INFORMATION

Brajendra Panda (479) 575-2067 bpanda@uark.edu

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# UNIVERSITY OF CALIFORNIA, DAVIS



Professor Karl Levitt founded the **University of California Davis (UC Davis) Computer Security Laboratory ("Seclab")** in 1986. The members of the "Seclab" have pioneered many areas of computer security including:

- First network Intrusion Detection Systems (NSM)
- First distributed Intrusion Detection Systems (DIDS)
- Modeling large scale attacks for IDS (GrIDS)
- First modeling of scenario attacks (Requires/Provides)
- Property-based testing and property-based models of vulnerability analysis

The research conducted by the members of Seclab crosses not only computer science boundaries, but also disciplinary boundaries, including work with political science, government policy, and law.

Members of Seclab have entered industry, academia,

#### **DESIGNATIONS**

- CAE Cyber Defense Education
- CAE Cyber Defense Research

#### **CONTACT INFORMATION**

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seclab.cs.ucdavis.edu

and government, and made many contributions to those sectors. Research projects span the entire field, including the use of argumentation in system security analysis, social network and "fake news" security to analyzing e-voting systems and the process of how an election is run.

We teach many computer security-related courses (for graduate students, undergraduate CS students, and non-CS majors), and are doing research in computer security and information assurance education. One such grant is looking at a way to teach secure programming (funded by the National Science Foundation). One of our faculty members co-led an Association for Computing Machinery/The Institute of Electrical and Electronics Engineers Joint Task Force on Cybersecurity Curricular guidelines, resulting in the release of the "Cybersecurity Curricula 2017: Curriculum Guidelines for Post-Secondary Degree Programs in Cybersecurity".

Finally, Professor Matt Bishop published the second edition of his widely-used textbook "Computer Security: Art and Science". It was one of the first textbooks to provide rigor for the field of cybersecurity.



### UCI

# UNIVERSITY OF CALIFORNIA, IRVINE



**UC Irvine's Donald Bren School of Information and Computer Sciences (ICS)** is proud to celebrate 10 years as an NSA/DHS National Center of Academic Excellence in Cyber Defense Research. As one of the few computing-focused schools in the nation—and the only in the UC system after 50 years—ICS is uniquely positioned to advance cybersecurity research. UCI is centrally located in Irvine, known as the "City of Innovation," which has quickly become one of Southern California's fast-growing tech and security hubs—home to numerous tech Fortune 1,000 companies, fast-growing startups, and a collaborative community of highly innovative people.

ICS has long been at the forefront of cybersecurity in education, housing over a dozen internationally renowned professors, including senior faculty members Michael Franz, Ian Harris, Scott Jordan, Sam Malek, Sharad Mehrotra, and Gene Tsudik, as well as new ICS faculty members Alfred Chan and Josh Garcia, whose research examines both technical and nontechnical dimensions of cybersecurity.

Over the last decade, ICS has also graduated over 30 Ph.D. students, and many more master's students, with a cybersecurity focus who have gone on to work in academia and industry at organizations such as IBM, Xerox PARC and SPAWAR. In 2016, UCI deepened its commitment to cybersecurity research by opening the Cybersecurity Policy and Research Institute (CPRI), with the goal of finding multidisciplinary legal, policy and technological solutions to combat cyber threats while protecting and enhancing individual privacy and civil liberties. CPRI is led by Executive Director Bryan Cunningham, an international expert on cybersecurity law and policy who formerly served as a White House lawyer and CIA officer and helped draft the first National Strategy to Secure Cyberspace.

#### **DESIGNATIONS**

• CAE - Cyber Defense Research

#### CONTACT INFORMATION

Gene Tsudik (949) 824-3410 gts@ics.uci.edu

cpri.uci.edu





### UNIVERSITY OF CINCINNATI





**CAE-CD -** The School of IT started a cybersecurity undergraduate track in 2014. The track courses were used to map to the CAE Knowledge Units and the **University of Cincinnati** was designated as a CAE-CD in 2016. The designation tremendously helped the growth of cybersecurity program. In four short years, we received a series of education and research grants, leading to an explosive growth of student enrollment in cyber programs.

**NSA-CNAP Grant** - Provided a 12-week training camp for 100 veterans, firefighters, and government workers.

**NSA-CNAP Grant** - Trained and prepared instructors and high school teachers to teach cybersecurity curricula.

**GenCyber Grant** – Summer camps to expose high school students/teachers to cybersecurity concepts.

#### **DESIGNATIONS**

- CAE Cyber Defense Education
- CAE Cyber Operations

#### **CONTACT INFORMATION**

**CAE-CD:** Dr. Chengcheng Li Chengcheng.li@uc.edu

**CAE-CO:** Dr. John Franco franco@uc.edu

**Cyber Range Grant** – A \$1.9m grant awarded to UC to provide cybersecurity education and exposure events to K-12, higher education, and professionals.

**Early College Program** – An education program between the School of IT and dozens of high school districts in Ohio to teach the complete first year college IT courses in high school.

In addition to the undergraduate cybersecurity track, a cybersecurity focused graduate program and a cybersecurity certificate program offered by School of IT and School of Criminal Justice experienced a rapid growth.

**CAE-CO -** In 2014 the NSA designated UC as a Center of Academic Excellence in Cyber Operations. The center has four aims:

- 1) Outreach, especially to high schools.
- Contribute to improving the quality and quantity of America's cyber workforce, especially in cyber operations.
- 3) Encourage student participation and motivation in cyber education and research.
- 4) Pursue advance research in topics related to cyber operations such as malware detection.

The excitement of designation has spawned a very active student group called Cyber@UC, whose main mission is education in cyber and outreach, and has made possible the creation of a cyber laboratory which Cyber@UC is building and will maintain.

### UCONN

### UNIVERSITY OF CONNECTICUT



The Connecticut Cybersecurity Center (C3) at the University of Connecticut has been designated as an NSA/DHS National Center of Academic Excellence in Cyber Defense Research since 2010. C3 is an applied research center that investigates, develops, promotes, and nurtures the best hardware and software-based security practices for indispensable defense and commercial (e.g., insurance, telecommunications) application domains. C3 is comprised of four niche cybersecurity centers: Center for Voting Technology Research (VoTeR), Center for Hardware and Embedded Systems Security and Trust (CHEST), Comcast Center for Security Innovation (CSI), and Synchrony Financial Center of Excellence in Cybersecurity.

The VoTeR Center is chartered to advise the State of Connecticut in the use of electronic election technologies, to investigate voting solutions and

**DESIGNATIONS** 

• CAE - Cyber Defense Research

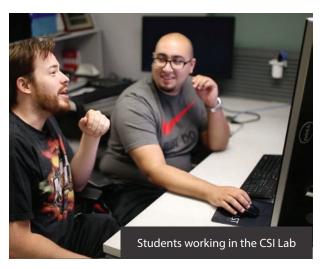
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voting equipment, and to develop and recommend safe use procedures for electronic systems used in the electoral process. CHEST, as a center, is focused on vulnerabilities and threats revolving around hardware abstractions, such as hardware counterfeits, Trojan detection, backdoors, hardware tampering, hardware vulnerability analysis, side-channel attacks (and resilience), and hardware quality and reliability.

The CSI and Synchrony centers, while spanning the breadth of hardware, software, and network cybersecurity research, is narrowly focused on the research challenges of Comcast Corp. and Synchrony Financial respectively. In addition to these centers, C3 also entertains cybersecurity issues materializing in encompassing domains such as mobile computing, medical systems, or web-based services and applications. C3 is home to 12 faculty, over 50 graduate and undergraduate students, and over \$4M in active research grants from industry and federal funding agencies.



#### UNIVERSITY OF DALLAS

Satish & Yasmin Gupta College of Business

## UNIVERSITY OF DALLAS



In 2003, the **University of Dallas** Cybersecurity program was designated by the NSA/DHS as a National Center of Academic Excellence in Cyber Defense Education. This STEM-designated program is AACSB accredited and nationally ranked by Best Colleges, Online Masters, and Online MBA Today. The program provides students with an in-depth understanding of the complexities in protecting and defending infrastructures and networks that contain valuable information. Courses are offered online, in the classroom, or through a combination of online and on-campus classes.

UD offers an MBA and an M.S. in Cybersecurity as well as Cybersecurity certificates and in fall 2019 will offer an M.S. in Cyber Intelligence. For the typical working professional taking two classes per semester the cyber programs can be completed in

1.5 to 3 years. The Cybersecurity course content is created with expert data from the NSA, NIST, UD's Cyber Advisory Council, and highly qualified academic and professional cybersecurity professors. UD graduates are some of the most sought-after cybersecurity professionals in the nation and often pursue careers in areas such as threat analysis, cyber defense, network security, penetration testing, and digital forensics. UD is an active supporter of Women in Cybersecurity (WiCyS), annually offering the George S. Sturgeon Cybersecurity Scholarship for Women. The Cybersecurity program is the largest professional graduate major at the University of Dallas. The NSA/DHS designation attracts quality students and contributes to the success of this program.

#### **DESIGNATIONS**

• CAE - Cyber Defense Education

#### **CONTACT INFORMATION**

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### UNIVERSITY OF DELAWARE



After seeking inputs from the U.S. Department of Defense, the U.S. government, the financial services industry, and other Fortune 500 corporations, the **University of Delaware** designed and created a unique and modern program for cybersecurity education.

Partnering with industry training leader SANS in the creation of a weeklong summer cyber boot camp for undergraduate, graduate, and later elite high school students, held yearly since 2010, reinforced the critical need to incorporate industrial strength, hands-on experiences into all phases of cybersecurity education.

With funding provided by the NSF, UD created a suite of third-generation cybersecurity educational programs which stress use of these student hands-on

#### **DESIGNATIONS**

• CAE - Cyber Defense Education

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experiences to create lasting reinforcement of the expanding body of knowledge of computer and network security now known as cybersecurity.

Foundation cybersecurity courses were created covering subjects such as system protection and hardening, web applications security, pen testing, applied crypto, secure software design, reverse engineering, forensics, and secure embedded systems. The resulting degree programs include certificate programs, a cybersecurity minor for all BS/BA students, both on-campus and online Master of Science in Cybersecurity, a unique dual Cybersecurity/MIS Master's, and a broad portfolio of cyber research opportunities for PhD students spanning several departments such as ECE and CIS. Topics covered include lattice and post-quantum cryptography, machine learning in cybersecurity, secure software, blockchain, indicators of compromise, and hardware security.

Realizing that all engineers, scientists, and college graduates need to understand how cybersecurity will play a part in their careers and in every product or service that they help create, UD is now introducing cybersecurity across all disciplines and recently created a four-year, multidisciplinary undergraduate program for incoming high school seniors called Cyber Scholars.



## UNIVERSITY OF DETROIT MERCY



Founded in 2004, the Center for Cyber Security and Intelligence Studies at University of Detroit Mercy

celebrates more than a decade of evolving excellence. The Center provides the education, experience, and resources essential to cultivate effective leaders in today's digitally dependent world. It combines University of Detroit Mercy's strength in software management, criminal justice, and computer expertise with its liberal arts foundations, and builds cybersecurity professionals who are guided by logic, critical thinking, and ethics.

Graduates have gone on to work for federal security agencies, Fortune 500 companies, and not-for-profit organizations. In addition, the Center's cybersecurity lab provides students with the tools to help law enforcement recover and validate through digital forensics.

Detroit Mercy is uniquely distinctive among CAEs by virtue of its well-documented history of excellence in software engineering education. Based on its publication and service record, Detroit Mercy is pre-eminent in a critical area of national academic interest — the study of secure software development and acquisition and ICT supply chain assurance. Detroit Mercy helped the Institute for Defense Analysis (IDA) develop the initial educational content and a pedagogy for ICT supply chain risk management in 2012.

As a result, it is one of only a few institutions that has a regular course in supply chain risk management. This particular expertise creates a unique program that produces not only conventionally skilled graduates but also specialists in ICT acquisition.

#### **DESIGNATIONS**

• CAE - Cyber Defense Education

#### **CONTACT INFORMATION**

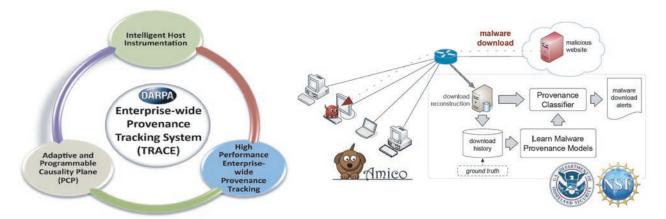
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### UNIVERSITY OF GEORGIA



The mission of the **Institute for Cybersecurity and Privacy (ICSP) at the University of Georgia** is to contribute to meeting the nation's cybersecurity defense research and education needs. The goal of ICSP is to become a state hub for cybersecurity research and education, including multidisciplinary programs and research opportunities, outreach activities, and industry partnership.

Research by five faculty members in the ICSP is currently funded by the National Science Foundation, U.S. Air Force, Defense Advanced Research Projects Agency, Department of Homeland Security, Department of Defense and several industrial partners including Intel, Samsung, Cisco, PinDrop, and CodeGuard.

A team of ICSP faculty and students competed in the 2016 DARPA Cyber Grand Challenge (CGC) and entered the final event. The first CGC event opened a new frontier in cyber defense as intelligent systems, not humans, competed in an attack and defense CTF-style contest. The UGA team was selected to enter the final competition from a field of over 100 qualified teams from the whole world. The event was the latest in a series of Grand Challenges issues since 2004 by DARPA. Previous well-known challenges included driverless cars and physical robotics. Both events had tremendous impact on the technology development and industry.

#### **DESIGNATIONS**

• CAE - Cyber Defense Research

#### CONTACT INFORMATION

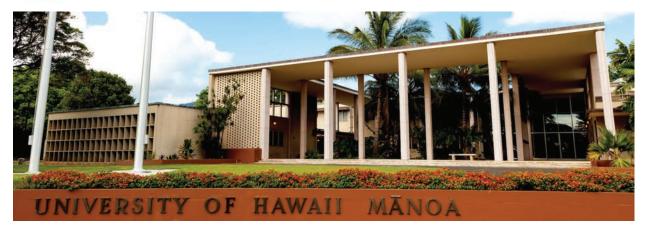
Dr. Kang Li (706) 542-2911 cybersecurity@uga.edu

cybersecurity.uga.edu





### UNIVERSITY OF HAWAI'I MANOA



The research of cybersecurity faculty at the University of Hawai'i - Manoa (UHM) covers many critical issues, including cryptography, cloud security, IoT security, information assurance, machine learning security, mobile/wireless security, network security, smart grid security, software/hardware security, supported by AFOSR, AFRL, EPSRC, NASA, NSA, NSF, NRL, ONR, ODNI, and industrial partners. UHM faculty have published 300+ papers in prestigious peer-reviewed journals and conferences, mentored security-focused graduate students, served as journal editors and reviewers, led research conferences, and given keynotes/invited talks at research conferences. These research successes earned UHM a CAE-R designation in May 2015. The designation provided many opportunities for Hawaiian communities including the establishment of the NSF CyberCorps® SFS program in 2016.

We have enhanced computer science BA/BS degrees with a Security Science Concentration and a management MS degree with Information Security. We have collaborated with local government, education institutions, and industry communities and founded CyberHawai'i in 2016, which broadens our outreach with high schools, community colleges, Hawai'i DOD, Hawai'i DOE, etc. We have hosted 18 NSF/NSA GenCyber Camps across 4 islands with 600+ campers since 2015. We have improved our curriculums with new security courses, including digital forensics, special topics in security (IoT, CPS, drone, wireless security, penetration testing, reverse engineering, etc.). We have worked with the UHM Airforce ROTC program and built the AFRL Cyber Spectrum Collaborative Research Environment program at UHM in 2017. We are currently improving cyber operation capabilities to build a CAE-OP in the next two years.

#### **DESIGNATIONS**

• CAE - Cyber Defense Research

#### **CONTACT INFORMATION**

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### UNIVERSITY OF HAWAI'I WEST O'AHU



Based on the rapid expansion of cyberspace operations and the importance of cybersecurity to both industry and the Asia-Pacific Region, the University of Hawai'i - West O'ahu (UHWO)

developed the Bachelor of Applied Science degree with a concentration in Information Security and Assurance. This degree program is the first of its kind at a public institution in Hawai'i and the Pacific, developed in response to national and state needs for graduates with expertise in cybersecurity. The program is designated as a National Center of Academic Excellence in Cyber Defense Education (CAE-CD), certified by the National Security Agency (NSA) and the Department of Homeland Security (DHS). UHWO is the only four-year university in the state to earn this designation. Enrollment in this nationally recognized program has grown from 13 students in 2014 to 131 students in Fall 2018.

Cybersecurity students from the university have twice in the past three years won the National Cyber League competition as overall National Champions.

Though the support of the Office of Naval Research, UHWO established the UHWO Cyber Security Coordination Center (CSCC) in order to further promote Cyber Workforce Development. CSCC students research and analyze global and technical cyber events in order to coordinate with and support local and regional partners.

The Cybersecurity program is one of five signature programs at UHWO, which has been the fastest growing four-year baccalaureate public school in the nation during the past two years. The school based in Kapolei, Hawai'i was founded in 1976 and has an enrollment of 3,128 students.

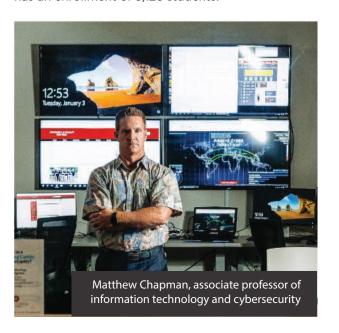
#### **DESIGNATIONS**

• CAE - Cyber Defense Education

#### CONTACT INFORMATION

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### HOUSTON

### UNIVERSITY OF HOUSTON



The **University of Houston** has developed a cybersecurity program under the aegis of the National Security Agency's Centers of Academic Excellence (CAE) Cyber Defense Education initiative and operated it since 2007. This program is situated with the Center for Information Security Research and Education in College of Technology, an institution that combines elements of engineering, computing, the sciences, business, and social sciences in applied, highly interdisciplinary, programs. In 2015 the program expanded to include the Department of Computer Science resulting in the CAE-Research designation.

Our programs prepare students for careers in cybersecurity via undergraduate, master's, and doctoral degrees. The recognized CAE-CDE program is a professional master's degree in cybersecurity. This degree is designed to provide hands-on skills for working security professionals to lead teams in cybersecurity. The program has specializations in critical infrastructure protections, digital forensics, and risk management. The University of Houston's Center for Information Security, Research and Education is the home of the CAE National Resource Center for Knowledge Unit development, an effort that leads the academic input that defines the academic requirements for CAEs.

#### **DESIGNATIONS**

- CAE Cyber Defense Education
- CAE Cyber Defense Research

#### **CONTACT INFORMATION**

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### University of Idaho

# UNIVERSITY OF IDAHO



With a tradition of cybersecurity education and research since 1990, the **University of Idaho (UI)** was among the first seven universities to be designated a Center of Academic Excellence in 1999. In 2002, the UI was one of the first five Universities to participate in the NSF Scholarship for Service program.

UI faculty at our main campus in Moscow, Idaho and our branch campuses in Coeur d'Alene and Idaho Falls work with undergraduate and graduate student researchers to help educate and train the next generation of cybersecurity workforce while developing cutting edge new technologies to improve the security of the nation's computer systems. Through the Computer Science Department and our Center for Secure and Dependable Systems (CSDS), students can earn a BS, MS or PhD in Computer Science with an emphasis in cybersecurity.

Students in Electrical and Computer Engineering can also take cybersecurity courses and work jointly with CSDS researchers on interdisciplinary research projects. Our partnerships with Idaho National Lab and local industry allow students to work on real-world problems related to critical infrastructure, including the power grid and transportation systems.

As an example of our expertise, our world class faculty include Dr. Alves-Foss, who, working with Dr. Jia Song (who was then a Postdoctoral Research Associate and has now joined the UI Faculty) participated in the DARPA Cyber Grand Challenge in 2014-2016, qualifying the smallest team for the finals. Using CSDS expertise, they built new tools to successfully compete against well establish, larger research teams in this cutting-edge competition.

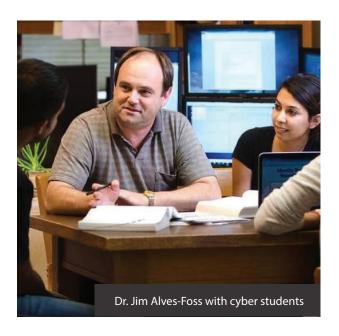
#### **DESIGNATIONS**

• CAE - Cyber Defense Education

### **CONTACT INFORMATION**

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### UNIVERSITY OF ILLINOIS AT SPRINGFIELD



Located in the state capital, the **University of Illinois Springfield (UIS)** is one of three members of the University of Illinois system. The University serves approximately 5,000 students in 22 graduate and 30 undergraduate programs. The academic curriculum offers students a strong liberal arts core, a wide range of professional programs, and close faculty interaction. Making the most of its location in the state capital, UIS is broadly engaged in public policy and service. Its diverse student body includes traditional, non-traditional, and international students. Twenty-five percent of majors are in 17 undergraduate and graduate online degree programs and the campus has received several national awards for its implementation of online learning. UIS faculty are committed teachers, active scholars, and professionals in service to society.

The UIS Computer Science Department offers programs in Information Systems Security, Computer Science, and Data Analytics. The department prides itself on its small class sizes and distinguished faculty dedicated to research and teaching. Our classes are offered both online and on-campus in interactive virtual environments that enrich student experience and facilitate active learning. Our programs are known for their diverse curriculum, cutting-edge courses, student-centered learning, return on investment, and for producing well-prepared graduates for both professional careers and graduate schools. Students participate in cybersecurity competitions, work on real-life problems, and engage in research projects.

### **DESIGNATIONS**

• CAE - Cyber Defense Education

### **CONTACT INFORMATION**

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# UNIVERSITY OF ILLINOIS AT URBANA-CHAMPAIGN



Since its founding in 1867, the **University of Illinois** at **Urbana-Champaign** has earned a reputation as a world-class leader in research, teaching, and public engagement. With our land-grant heritage as a foundation, we pioneer innovative research that tackles global problems and expands the human experience. Entrepreneurship flows from our classrooms to our Research Park, a space that houses everything from Fortune 500 companies to student-founded startups. We are consistently ranked among the top five universities for NSF-funded research, and our total annual research funding exceeds \$600 million.

The Illinois Engineering program is one of the highest-ranked in the world, and our students, faculty, and alumni set the standard for excellence. We have a large and growing pool of faculty and

projects concentrating on cybersecurity, both in academic departments, such as Computer Science and Electrical & Computer Engineering, and in interdisciplinary research centers, such as the Coordinated Science Laboratory and the Information Trust Institute (ITI). ITI provides national leadership in the creation of trustworthy critical applications and cyber infrastructures. Over 200 ITI faculty affiliates are working to design complex systems that deliver predictable levels of reliability, security, privacy, safety, performance, and availability, even in the presence of unknowns.

The Center for Cyber Defense Education and Research at Illinois is in ITI. It advocates for and leads a variety of programs and events related to information assurance and cyber defense. Over 500 students take computer security courses every year at Illinois.

### **DESIGNATIONS**

- CAE Cyber Defense Education
- CAE Cyber Defense Research

### **CONTACT INFORMATION**

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# UNIVERSITY OF KANSAS



The Department of Electrical Engineering and Computer Science (EECS) and the Information and Telecommunication Technology Center (ITTC) at the **University of Kansas (KU)** are a designated National Centers of Academic Excellence in Cyber Defense Education.

The EECS Department offers five Bachelor of Science degrees, four Master of Science degrees and two Ph.D. degrees in Electrical Engineering, Computer Engineering, Computer Science, Interdisciplinary Computing, and Information Technology. The Department also offers a graduate certificate in Information Security and Assurance. KU ITTC performs research in security modeling and analysis, information security and privacy, network security, mobile security, CPS and IoT security, theoretical modeling, and high-assurance system synthesis and verification.

Several initiatives highlight KU's commitment to excellence in cybersecurity education, research and the overall student experience:

- KU is one of the six Science of Security Lablets funded by NSA Research Directorate to conduct foundational research in cybersecurity
- KU's CyberCorps®: Scholarship for Service (SFS)
   program provides scholarships for up to three
   years of support for cybersecurity undergraduate
   and graduate education
- KU's Information Security Club (the "Jayhackers") is a competition-based student group
- Cybersecurity research in KU has been supported by governement agencies and industry partners, including NSA, NSF, AFRL, NASA, Ripple, etc.

### **DESIGNATIONS**

• CAE - Cyber Defense Education

### **CONTACT INFORMATION**

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# UNIVERSITY OF LOUISVILLE



The **University of Louisville** is a state supported research university located in Kentucky's largest metropolitan area. It was a municipally supported public institution for many decades prior to joining the university system in 1970. The University has three campuses. The 287-acre Belknap Campus is three miles from downtown Louisville and houses seven of the university's 12 colleges and schools. The Health Sciences Center is situated in downtown Louisville's medical complex and houses the university's health related programs and the University of Louisville Hospital. The 243-acre Shelby Campus is located in eastern Jefferson County.

Our institution provides cybersecurity programs in two schools: the departments of Computer Engineering and Computer Science (CECS) and Computer Information Systems (CIS). The CECS department offers a graduate certificate in cybersecurity. The CIS department offers an undergraduate certificate in information security. These programs provide educational, research, and service activities in cybersecurity, information assurance, forensics, and legal aspects of computing. Also, they aim to promote secure and ethical use of information technology throughout the university and the community at large.

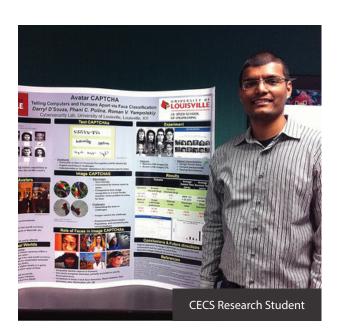
### **DESIGNATIONS**

CAE - Cyber Defense Education

### **CONTACT INFORMATION**

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# UNIVERSITY OF MAINE AT AUGUSTA



In 2014, the **University of Maine at Augusta (UMA)** was initially designated as a National Center of Academic Excellence (CAE) in Cyber Defense (CD) Education, and is still the only institution in Maine to be recognized.

Started in the fall of 2015, the UMA Bachelor of Science in Cybersecurity degree program incorporates a multidisciplinary perspective through a combination of courses that offer a holistic approach to cybersecurity education by providing the opportunity to take courses not only in computer science and technology but also in the humanities, social sciences, and ethics.

In 2018, the UMA and its member institutions of higher education established the Maine Cybersecurity Center (MCC) as the designated Center for Cyber Education. Replacing the Maine Cybersecurity Cluster established in 2013, the MCC provides support and oversight for the core academic program in cybersecurity.

Dr. Henry J. Felch, Associate Professor of Cybersecurity and Computer Information Systems at UMA, is the Director of the MCC and the Cyber Program Chair. The goal of the Maine Cybersecurity Center is to provide the State of Maine with trained cybersecurity professionals by bringing together government, industry, and academia dedicated to workforce and economic development in the field of cybersecurity and information assurance.

Since the degree program began, it has grown to more than 300 students enrolled in Information Security Systems (ISS) and Computer Information Systems (CIS) courses statewide.

### **DESIGNATIONS**

• CAE - Cyber Defense Education

### **CONTACT INFORMATION**

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# UNIVERSITY OF MARYLAND



The Maryland Cybersecurity Center (MC2) is an academic center on the University of Maryland (UMD) campus that brings together faculty, researchers, and students working in the field of cybersecurity throughout campus. The Maryland Global Initiative for Cybersecurity also promotes and coordinates efforts across UMD to expand its cyber education, research, and development activities.

Our proximity to the nation's capital enables close interaction with federal agencies, and our location in the Maryland-DC-Virginia region makes UMD an ideal place for technology development and partnerships with industry. In addition to graduate level courses and undergraduate degree concentrations in cybersecurity within the A. James Clark School of Engineering and the College of Computer, Mathematical, and Natural Sciences, the Advanced Cybersecurity Experience for Students (ACES) seeks

#### **DESIGNATIONS**

• CAE - Cyber Defense Research

### **CONTACT INFORMATION**

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cyber.umd.edu

to revolutionize cybersecurity education by emphasizing the need for students to master both technical and nontechnical skills. ACES, as an Honors College living-learning and minor program, draws together exceptional students of different backgrounds into teams that create comprehensive solutions to real-world problems.

UMD is unique in its comprehensive, interdisciplinary approach to cybersecurity, in that it brings together not only faculty with expertise in the core areas of computer science and electrical engineering, but also those with backgrounds in various multi-disciplinary areas. MC2 has particular strengths in cryptography, programming-language and software security, behavioral aspects of security, empirical security, and cybersecurity economics.

UMD ranks among the top 20 public research universities in the nation, with top-ranked departments in computer science and electrical and computer engineering. NSA has designated the University of Maryland as a CAE-R, and the university was also named an Intelligence Community Center of Academic Excellence by the Department of Homeland Security. The CyberCorps®: Scholarship for Service (SFS) program at ACES seeks to address cybersecurity education and workforce development through a grant from National Science Foundation.



# UNIVERSITY OF MARYLAND UNIVERSITY COLLEGE



The **University of Maryland University College** offers online and hybrid courses and a range of cybersecurity degrees, specializations, and certificates. These innovative programs are created and continually updated with input from employers and cybersecurity experts and are taught by experienced scholar-practitioners who are leaders in their fields.

### **Undergraduate Certificate**

Computer networking

#### **Bachelor's Degrees**

- Computer networks and cybersecurity
- Cybersecurity management and policy
- Software development and security

#### **Graduate Certificates**

- Cybersecurity management and policy
- Cybersecurity technology
- Information assurance

#### **Master's Degrees**

- Cloud computing architecture
- Cybersecurity management and policy
- Cybersecurity technology
- Digital forensics and cyber investigation
- Info. technology with info. assurance specialization

UMUC offers a virtual lab that provides a secure environment for students to gain hands-on experience in detecting and combating cyber-attacks. In addition, UMUC's cybersecurity program consistently receives high honors within the cybersecurity industry. In 2018, UMUC received the award for Best Cybersecurity Higher Education Program from SC Magazine and an Academia Circle of Excellence Award from EC-Council.

### **DESIGNATIONS**

• CAE - Cyber Defense Education

### CONTACT INFORMATION

To learn more, contact UMUC (855) 655-UMUC css@umuc.edu

umuc.edu/cyber





# THE UNIVERSITY OF MEMPHIS



The **Center for Information Assurance (CfIA)** at the **University of Memphis** was established in 2004. The long-term goal is to establish a regional hub for Cybersecurity Education and Research in collaboration with public and private sectors in the State of Tennessee with significant impacts on economic development, citizen privacy, and security.

The University's undergraduate and graduate degree/certificate programs are:

- B.S. in Cybersecurity Concentration
- Graduate Certificate in Cybersecurity
- Graduate Certificate in Business Information Assurance
- Graduate Certificate Program in Software Testing
- PhD in Business Administration with research and dissertation in Business Information and Technology
- PhD in Computer Science with research and dissertation in cybersecurity

The CfIA is a founding member of the National Cybersecurity Preparedness Consortium (NCPC). This five-university consortium is currently funded through DHS/FEMA grants to develop cybersecurity courses on Understanding Social Engineering Attacks (USEA), Mobile Device Security & Privacy (MDS/MDP), Cyber Identity & Authentication (CIAA) and Examining Advance Persistent Threats (EAPT).

- Puzzle Based Cybersecurity Learning to Enhance Defensive Skills of Front-Line Technicians: A three-year NSF funded research collaboration with Jackson State Community College
- Adaptive Multi-Factor Authentication (A-MFA): A project that aims to develop an A-MFA system.
- GenCyber 2016 & 2017: Cybersecurity camp for Middle & High School students
- Cyber Ambassador Tech Camp 2018
- Professional Development Workshops

### **DESIGNATIONS**

- CAE Cyber Defense Education
- CAE Cyber Defense Research

### **CONTACT INFORMATION**

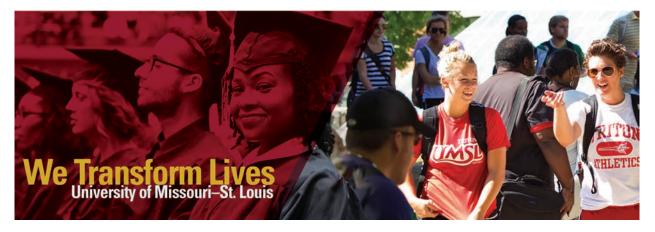
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# UMSL

# UNIVERSITY OF MISSOURI-ST. LOUIS



The **University of Missouri–St. Louis (UMSL)** is the largest public research university in eastern Missouri. It provides excellent learning experiences and leadership opportunities to a diverse student body whose influence on the region upon graduation is immense.

The departments of Information Systems and Technology (College of Business Administration) and Computer Science (College of Arts and Sciences) have teamed to create a multidisciplinary approach to developing the next generation of cybersecurity professionals. This approach engenders security thinking and skills at the interface of technical and business aspects of cybersecurity.

Given the fast pace of change in cybersecurity, our certificate programs strive to better meet student and market needs. Undergraduate and graduate cybersecurity degree programs are expected to launch in Fall 2019. In addition to research and teaching, faculty serve the community by organizing events such as a major cybersecurity conference, career fairs, capture-the-flag competitions for school and college students, and workshops, among others.

UMSL is home to the state-of-the-art Cybersecurity and Information Technology Innovation Lab (CITIL) dedicated to applied student learning and research. CITIL provides physical lab facilities and equipment, a fully virtualized sandboxed lab environment, and access to a self-service private cloud environment so that students can create any lab infrastructures they need. The private cloud environment was supported by a grant from the National Security Agency (NSA) and another NSA grant led to creation of IoT security coursework. UMSL is a proud member of the CAE community and grateful for the truly impactful and transformative CAE program.

### **DESIGNATIONS**

• CAE - Cyber Defense Education

### **CONTACT INFORMATION**

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cybersecurity.umsl.edu





# UNIVERSITY OF MONTANA MISSOULA COLLEGE



Missoula College (MC) delivers cybersecurity education through coursework, internships, apprenticeships, certifications, certificates of technical skills, two-year degrees, pathways to baccalaureate degrees, and community outreach. MC was designated as a National Center of Academic Excellence in Cyber Defense (CAE2Y-CD) by the National Security Agency (NSA) and Department of Homeland Security (DHS) in September 2017. The MC CAE2Y-CD is based upon four pillars of excellence:

- Relevant two-year college curricula mapping to Cyber Defense KUs designated by the NSA/DHS
- Qualified faculty with the appropriate credentials in cyber defense as recognized by the NSA/DHS
- An institutional culture of interdisciplinary cybersecurity education and best-practices
- Ongoing outreach and partnerships with the local community and industry partners

The Center provides community outreach in cybersecurity through high school dual-enrollment education programs, summer camps for middle school students, a cybersecurity higher education summit, and the annual Cybersecurity Awareness Week event. Associate degree students at Missoula College are required to participate in a work-based learning experience. The "Earn While You Learn" program provides students over 2000 hours of paid on-the-job training, while earning the associate degree and a credential from the Montana State Department of Labor & Industry.

MC is a CompTIA Academy, Cisco Networking Academy, a member of the Microsoft IMAGINE, and Amazon EDUCATE. Certifications are integrated into academic curriculum to validate industry-relevant skills. A local employer advisory committee meets regularly to advise, assist, and advocate for cybersecurity education at Missoula College.

### **DESIGNATIONS**

CAE – Cyber Defense 2-Year Education

### CONTACT INFORMATION

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mc.umt.edu



### UNIV

# UNIVERSITY OF NEVADA, LAS VEGAS



#### The University of Nevada, Las Vegas (UNLV)

Computer Science Department was designated as a National Center of Academic Excellence in Cyber Defense Education in 2019. Its Information Assurance program emphasizes research and education in the broad issues of developing trustworthy information systems and the cybersecurity workforce shortage. The core faculty members specialize in network security, computer forensics, cryptography, security data analytics, and blockchain security. They produce highly trained graduates at B.S., M.S. and Ph.D. levels. UNLV has also recently created an interdisciplinary cybersecurity M.S. program. Students are educated with a sound understanding in cyber law, risk management, emergency response, control frameworks, and the technologies involved in a rich and deep cybersecurity environment.

UNLV is an accredited test center approved by EC-Council and regularly offers Certified Ethical Hacker (CEH) training classes and exams. Community involvement is a crucial part of the program providing financial support for certifications, mentors, lecturers, internships, and employment opportunities. Situated at the home of Black Hat and DEFCON conferences, UNLV students regularly participate in security conferences and competitions.

UNLV, a Title III & V Minority- and Hispanic-serving institution, has consistently been listed as the most diverse campus for undergraduate students in U.S. News & World Report since 2017. It has also been ranked an R1 "very high research" institution by the Carnegie Classification of Institutions of Higher Education. UNLV aims to be an institution of choice in the southwest U.S. for those wanting to start a career in cybersecurity.

### DESIGNATIONS

CAE – Cyber Defense Education

### **CONTACT INFORMATION**

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unlv.edu/program/cybersecurity





## UNIVERSITY OF NEW MEXICO



**University of New Mexico Anderson** faculty members have developed a program that is unique in the country, if not the world, with the following characteristics and benefits to students:

- Master's of Information Systems and Assurance offered through UNM's Anderson School of Management
- Partnership with the FBI and its Regional Computer Forensics Lab (RCFL), housed at UNM, through training, student internships, and co-ops
- A partnership with the Department of Energy's first satellite office for the Center for Cyber Defenders through Sandia National Laboratories
- The Metro Law Enforcement Internship program designed for students to work with local crime units
- A designation from the National Security Agency (NSA) and the Department of Homeland Security (DHS) as a Center of Academic Excellence in Cyber Defense Education (CAE-CD) and Research (CAE-R)

UNM also offers an Information Assurance Scholarship for Service Program. The UNM Information Assurance Scholarship for Service (SFS) program is funded through a National Science Foundation grant to provide scholarships to complete a master's degree in the information assurance (IA) field.

UNM SFS students have been placed in internships and careers at the Department of Defense, Department of Homeland Security, Department of Treasury, Environmental Protection Agency, Federal Bureau of Investigation, Federal Reserve Bank, Los Alamos National Labs, National Institute of Standards, National Security Administration, Sandia National Labs, and Securities and Exchange Commission.

### **DESIGNATIONS**

- CAE Cyber Defense Education
- CAE Cyber Defense Research

### **CONTACT INFORMATION**

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# UNIVERSITY OF NORTH CAROLINA WILMINGTON



The University of North Carolina Wilmington (UNCW) received the NSA/DHS CAE-CDE designation in September 2018. The Information Technology major with Cybersecurity minor is the designated CAE-CDE curriculum path and is an interdisciplinary course of study shared by the Department of Computer Science and the Department of Business Analytics, Information Systems, and Supply Chain (formerly ISOM). The UNCW Center for Cyber Defense Education was established in anticipation of CAE-CDE designation with the stated purpose to strengthen the cybersecurity aptitude of our entire community of scholars so they are equipped to wisely balance the unique risks of living in an all-digital future. Leading up to the decision in Fall 2017 to seek CAE-CDE designation, many UNCW staff, faculty, and students contributed to the continual advancement of

UNCW's cybersecurity strength. Among this large group, a few key players were Professors Ulku Clark (CCDE Director) and Ron Vetter who laid years of groundwork and student veteran Jay Richardson (2020) who was instrumental in invigorating the idea that UNCW take the step to seek formal recognition via CAE-CDE designation. A good indicator of UNCW's cybersecurity expertise is the cyber defense club's (CDC) record since being founded in 2012 of progressing past the annual virtual prelim qualifier to the on-site Southeast Regional Collegiate Cyber Defense Competition. UNCW is one of four regional institutions with the best qualification record (six out of seven years) since 2012. UNCW has been continually adding and improving cybersecurity content across much of the entire University's curriculum for many years and plans to accelerate along this trajectory.

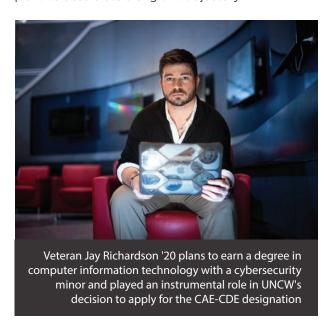
### **DESIGNATIONS**

• CAE - Cyber Defense Education

### **CONTACT INFORMATION**

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csb.uncw.edu/ccde





# UNIVERSITY OF NORTH GEORGIA



The Center for Cyber Operations Education at the University of North Georgia (UNG) develops highly capable cyber professionals and leaders for the private, non-profit, military, and government sectors. UNG is designated by the NSA and Department of Homeland Security as a National Center of Academic Excellence in Cyber Defense (CAE-CD). UNG is also designated as a University System of Georgia leadership institution and is The Military College of Georgia, one of six federally-designated Senior Military Colleges in the nation.

UNG offers a Bachelor of Science degree in Cybersecurity, a Graduate Certificate in Cybersecurity, two degree concentrations, and two minors. The Department of Computer Science and Information Systems (CSIS) has offered the Concentration in Information Assurance and Security (IAS) as part of the Bachelor of Science degree in Computer Science since 2004 and serves more than 1,200 students in the department and in related majors taking cybersecurity courses.

The Department of CSIS offers the Information Assurance and Security Minor, and, jointly with the Department of Criminal Justice, the Minor in Cybersecurity, to add value to any undergraduate major across all disciplines. The interdisciplinary Bachelor of Arts degree in Strategic and Security Studies offers a Concentration in Cybersecurity for students interested in military, government, or intelligence careers.

The nationally-ranked CyberHawks cyber competition team participates in more than a dozen cyber competitions per year and provides opportunities for student certifications and conference travel.

### **DESIGNATIONS**

CAE – Cyber Defense Education

### CONTACT INFORMATION

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ung.edu/cyber



# THE UNIVERSITY OF RHODE ISLAND

# THE UNIVERSITY OF RHODE ISLAND



### The University of Rhode Island's Digital Forensics and Cyber Security Center (DFCSC) is a

multi-disciplinary hub on the Kingston, RI campus that harnesses the resources of Computer Science, Electrical and Computer Engineering, and the Office of Information Technology. Established in 2004 with a grant from the U.S. National Science Foundation, the DFCSC provides courses and degree programs, research, services, and consulting in digital forensics, information assurance, and cybersecurity. Its research objective is to formulate new concepts that help digital forensics and cybersecurity professionals protect the nation's citizens. The DFCSC also focuses on preparing the workforce of tomorrow through extensive outreach into K-12 education in computer science, data science, and cybersecurity.

The DFCSC members work closely with a number of different academic institutions, government organizations, state and local law enforcement agencies, and private companies. We draw on the expertise of these partners to help in developing digital forensics and cybersecurity related capabilities and guiding the direction of DFCSC projects and education. The Digital Forensics and the Cybersecurity programs approach teaching as a mixture of academic and practical points of view. This hybrid approach allows students to build a strong foundation and expand their knowledge by applying real-world techniques and tools to the subjects being taught. Students also leverage the close knit nature of the State of Rhode Island to obtain experience through internships, job shadowing, and apprenticeships.

### **DESIGNATIONS**

- CAE Cyber Defense Education
- CAE Cyber Defense Research

### CONTACT INFORMATION

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dfcsc.uri.edu





# UNIVERSITY OF SOUTH ALABAMA



The **University of South Alabama** School of Computing has been a National Center of Academic Excellence in Information Assurance / Cyber Defense Education since 2011 and was re-designated in 2014 under the new program criteria. USA School of Computing is unique to the state where all computing disciplines are housed in the same academic unit. This centralization allows for faculty and students unique opportunities to collaborate through academics, research, internships, and technology transfer. The School offers ABET accredited degrees in Computer Science, Information Systems, and Information Technology, as well as a degree in Health Informatics.

At the graduate level, Master's students are awarded a degree in Computer and Information Sciences with a focus in Computer Science or Information Systems. Our PhD in Computing degree integrates coursework and research projects from computer science, information systems, and information technology, merging different perspectives and creating impactful advancements in areas such as cybersecurity, digital forensics, big data, and cloud computing. Students gain sound preparation for a wide variety of information assurance careers and for continuing their education to the terminal degree.

Our programs provide both a strong theoretical foundation and practical hands-on experience in the core aspects of security. In coordination with our Center for Forensics, Information Technology and Security, students at all levels can participate in research and internships beginning as early as the freshman year. Students completing the mapped CAE curriculum are awarded IA certificates upon completion of the program.

### **DESIGNATIONS**

CAE - Cyber Defense Education

### **CONTACT INFORMATION**

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southalabama.edu/colleges/soc





# UNIVERSITY OF SOUTH FLORIDA



#### The University of South Florida (USF) has

distinguished itself as a leader in the cyberdefense and cybersecurity domains and is also home to the Florida Center for Cybersecurity. USF currently offers an impressive breadth of interdisciplinary, cybersecurity-specific degree and certificate programs (at both the undergraduate and graduate levels) and is conducting a wealth of innovative research under the guidance of renowned faculty scholars.

In particular, the undergraduate programs include Florida's first B.S. in Cybersecurity, a B.S. in Information Studies with a concentration in Information Security, a B.S. in Business Analytics and Information Systems with a concentration in cybersecurity, and an undergraduate certificate in Foundations of Cyber Security. Meanwhile, graduate programs include the M.S. in Cybersecurity with concentrations in Digital

Forensics, Cyber Intelligence, Computer Security
Fundamentals, and Information Assurance; an M.A. and
M.S. in Cybercrime; an M.S. in Intelligence Studies with
a concentration in Cyber Intelligence; an M.S. in
Learning Design and Technology with a concentration
in Cybersecurity Education; and an M.B.A. with a
concentration in Cybersecurity. A range of graduate
certificates are also offered in Cyber Intelligence,
Digital Forensics, Information Assurance, and
Cybersecurity Education and Awareness.

Additionally, USF faculty are engaged in a range of interdisciplinary research projects spanning many diverse cyberdefense areas, including but not limited to cyberphysical and IoT systems security, network privacy and security, secure software systems, persistent threat detection, human factors and Internet safety, applications of machine learning.

### **DESIGNATIONS**

- CAE Cyber Defense Education
- CAE Cyber Defense Research

### **CONTACT INFORMATION**

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### UNIVERSITY OF TENNESSEE AT CHATTANOOGA



The University of Tennessee at Chattanooga (UTC) InfoSec (Information Security) Center located within the College of Engineering and Computer Science, and in collaboration with the College of Business, College of Art and Science, and College of Health, Education and Professional Studies. The UTC InfoSec Center was designated as a National Center for Academic Excellence for Cyber Defense (CAE-CD) from NSA and DHS.

The mission of the Center is to serve as a regional model for promoting excellence in information security education, assisting businesses, government agencies, education institutions and industry in their information security needs, and serving as the first point of call for any information security emergency. The Computer Science department offers courses, as well as, concentrations in Cybersecurity at both the undergraduate and graduate levels.

The CAE-CD Center strives to:

- Prepare students to meet the challenges posted by the rapid developments in information technologies and the corresponding emergence of new threats and attacks on the critical information infrastructure upon which our society has come to depend
- Provide working professionals with the security skills and best practices needed to meet the workplace challenges resulting from current advances in computer technology
- Promote excellence in information security research by keeping abreast of developments in emerging areas
- Serve the University and the surrounding communities with leadership and distinction

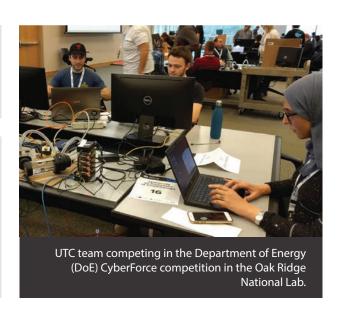
### **DESIGNATIONS**

• CAE - Cyber Defense Education

#### CONTACT INFORMATION

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utc.edu/cae-cd





# UNIVERSITY OF TEXAS AT DALLAS



Over the past 15 years, cybersecurity has become one of the key areas of strength at **UT Dallas**. In 2004, UT Dallas established its **Cyber Security Research and Education Institute (CSI)** with a mission to be a national resource for the government, industry, and academia by conducting cutting edge interdisciplinary research and providing comprehensive education in all aspects of cybersecurity, and training students with the capability to carry out cyber operations. Today, CSI houses 10 core and over a dozen affiliated faculty members conducting funded research and supervising over 40 PhD students in cybersecurity.

UT Dallas is designated as a CAE in Cyber Defense Education (CAE-CDE) since 2004. The curriculum requirements of this program are mapped to several graduate courses in Computer Science (CS) and students fulfilling these requirements are awarded these graduate certificates. UT Dallas also holds a CAE in Cyber Defense Research (CAE-R) since 2008. This designation acknowledges the research work performed by our faculty in various areas of cybersecurity. UT Dallas obtained its designation as a CAE in Cyber Operations (CAE-CO) in 2015. The curriculum requirements of this program are mapped to a number of graduate courses in CS. Students completing these courses receive notations in their academic transcripts recognizing their achievement.

CAE designations enabled UT Dallas to compete in NSA and NSF scholarship programs which have graduated over 40 domestic students and placed them into related government jobs. The designation also enabled our faculty to receive competitive NSA funding to conduct research in cyber defense.

### **DESIGNATIONS**

- CAE Cyber Defense Education
- CAE Cyber Defense Research
- CAE Cyber Operations

### **CONTACT INFORMATION**

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# UNIVERSITY OF TEXAS AT SAN ANTONIO



Today's world calls for greater collaboration to protect America's national security infrastructure. **University of Texas at San Antonio (UTSA)** is leading this charge, armed with the most powerful cyber, computing, cloud and data analytics teams of faculty, government professionals, and business professionals, along with our students. Now, with the vision of a new National Security Collaboration Center and a proposed School of Data Science becoming reality on our Downtown Campus, UTSA is the undisputed leader in cybersecurity education.

UTSA defends cyber space through creative approaches in business, science, and engineering, and liberal and fine arts. Five centers and institutes advance that work, which focuses on solving global security challenges in today's increasingly technological world.

San Antonio is among the nation's largest cybersecurity hubs and home to the largest concentration of cybersecurity experts and industry leaders outside Washington, D.C.

UTSA's cybersecurity graduates are heavily recruited and are employed quickly. They are hired in governmental positions and with top national/international commercial companies.

UTSA students can specialize in cybersecurity, computer science, computer engineering or information systems. Additional programs are offered in data center design, network and data center management, digital forensics and data analytics. In fall 2017, UTSA began offering a fully online B.B.A. in Cyber Security.

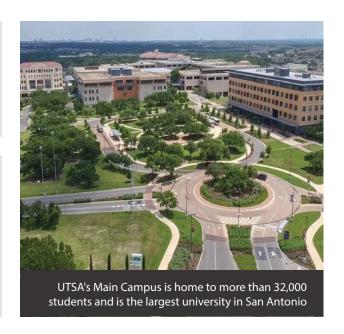
#### **DESIGNATIONS**

- CAE Cyber Defense Education
- CAE Cyber Defense Research
- CAE Cyber Operations

### **CONTACT INFORMATION**

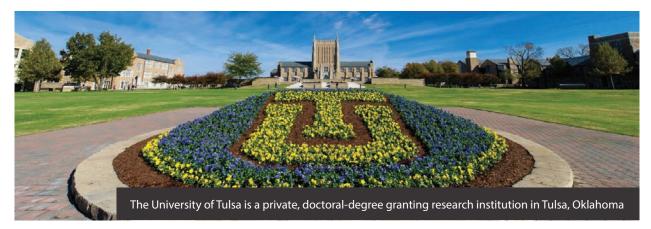
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bit.ly/2HIYEqQ





# THE UNIVERSITY OF TULSA



The University of Tulsa (TU) has been a designated Center of Academic Excellence in Cyber Defense since 2000 and was one of the first 14 institutions awarded this distinction. TU also is recognized as a CAE in Research and Cyber Operations. TU cybersecurity alumni are employed worldwide in leading roles among the private and public sectors, as well as academia.

TU offers multiple programs for students who want to advance in cybersecurity education. At the undergraduate level, students from disciplines across the university can pursue a minor in cybersecurity. Graduate students can earn master's degrees in cybersecurity and computer science. The Master of Science in Cybersecurity offers an online professional track degree, as well as an accelerated option. The Ph.D. degree in computer science targets

graduate students seeking a career in research and scholarship. TU has a long-standing reputation for excellence in cybersecurity research with campus projects supported by the National Security Agency, U.S. Department of Defense, National Science Foundation, U.S. Department of Energy, the U.S. Department of Transportation, the National Institute of Justice and the Defense Advanced Research Project Agency.

Armed with a high-quality education and valuable experience in research and real-world scenarios, TU's cybersecurity graduates are well equipped to serve in intellectually stimulating and personally rewarding roles that strengthen national and global security. Graduates are grounded in the theory, concepts and techniques of information assurance, and network defense and apply them in real-world settings.

### **DESIGNATIONS**

- CAE Cyber Defense Education
- CAE Cyber Defense Research
- CAE Cyber Operations

### **CONTACT INFORMATION**

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utulsa.edu/cyber





# UNIVERSITY OF VIRGINIA



The **University of Virgina's** Department of Computer Science in the School of Engineering and Applied Science promotes cybersecurity education and research in its undergraduate and graduate levels. The Computer Science graduate program aims to produce well-educated researchers, teachers, and future leaders in Computer Science. The department offers a Bachelor of Science in Computer Science, a Bachelor of Arts in Computer Science, and a Bachelor of Science in Computer Engineering. Students in our program who go through our Cybersecurity Focal Path receive a Letter of Completion of such path which is designated by the NSA and DHS.

UVA is also active in national competitions, to help our students and faculty stay familiar with cutting-edge techniques. For example, UVA and its partner GrammaTech, took second place in DARPA's 2016 Cyber Grand Challenge finale, showcasing next-generation technologies for software vulnerability discovery and application hardening. Our student-led Computer and Network Security Club participates in national capture the flag events and cybersecurity competitions. Our Cyber Defense team won the 2018 National Collegiate Cyber Defense Competition. The department has hosts a GenCyber camp during the summer to introduce the foundations of cybersecurity for high school teachers and promote cybersecurity in K-12 education.

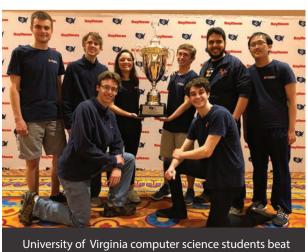
### **DESIGNATIONS**

• CAE - Cyber Defense Education

### CONTACT INFORMATION

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cyberinnovation.virginia.edu



University of Virginia computer science students beat nine nationally ranked competitors to earn the 2018 championship at the National Collegiate Cyber Defense Competition



## UNIVERSITY OF WASHINGTON



The **University of Washington (UW)** is ranked No. 14 in the world (No. 3 among U.S. public universities) according to the 2018 Academic Ranking of World Universities published by the Shanghai Ranking Consultancy. UW graduates 54,000 students annually and is one of the most successful public research universities with over \$1.5 billion in grants and contracts annually. UW Medicine ranks No. 1 for primary care education; Computer Science and Engineering ranks among the top 5 in the nation. We are known for a proud culture of innovation, collaboration, and discovery that has transformational impact.

Formed in 2004, the UW Center for Information Assurance and Cybersecurity (CIAC) headquartered at Bothell, prepares cybersecurity professionals as breach-ready, critical thinkers. As one of the NSA's Regional Resource Centers, CIAC was recognized in 2014 by the Ponemon Institute as among the top ten places in the world to study cybersecurity. We take a "rules & tools" perspective, treating cybersecurity as an interdisciplinary field of study. Taking a systems approach, we are known for cross sector collaborations with industry, military, government, and academia that have produced successful programs like our cooperative learning approach piloted with a leading industry partner.

Under Dr. Endicott-Popovsky's leadership, CIAC has earned both CAE-CDE and CAE-R designations, founded the Pacific Rim Collegiate Cyber Defense Competition (PRCCDC) coming in first at nationals in 2010 and 2011, received recognition from UPCEA for best for-credit certificate, as well as numerous teaching and curriculum awards.

### **DESIGNATIONS**

- CAE Cyber Defense Education
- CAE Cyber Defense Research

### **CONTACT INFORMATION**

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# UNIVERSITY OF WEST FLORIDA



The **University of West Florida** advances cybersecurity innovation through its nationally ecognized programs, research, and Center for Cybersecurity. UWF offers the only NSA/DHS CAE-designated B.S. in Cybersecurity in Florida in addition to multidisciplinary undergraduate and graduate programs and certificates in cybersecurity, computer science, IT and information security management. A program agreement between the NSA and UWF allows students who complete the Joint Cyber Analysis Course to earn credits toward the UWF B.S. in Cybersecurity.

In 2018, UWF launched partnerships with the state of Florida to enhance cybersecurity resiliency and workforce development. The UWF Center for Cybersecurity partners with the Florida Agency of State Technology to provide cutting-edge cybersecurity training for state agency personnel.

#### **DESIGNATIONS**

• CAE - Cyber Defense Education

### **CONTACT INFORMATION**

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The Florida Department of State proactively partnered with the UWF Center for Cybersecurity to conduct training for elections personnel.

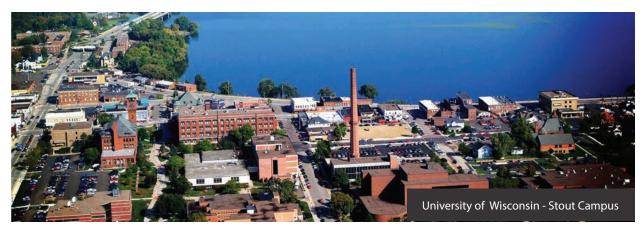
The UWF Center for Cybersecurity launched the Cybersecurity Ambassadors Program in 2018 to enhance cybersecurity awareness and interest in cybersecurity education and careers. UWF cybersecurity students serve as ambassadors and visit K-12 schools in Northwest Florida to share their cybersecurity expertise and increase students' cybersecurity awareness through engaging activities and demos. UWF leads and supports a variety of K-12 outreach initiatives, including GenCyber camps, CyberPatriot, and CyberThon. In 2017 and 2018, UWF hosted the only GenCyber camps in Florida funded by the NSA and National Science Foundation, and UWF will host camps in 2019.

UWF hosts numerous community events, including the DHS Cybersecurity Roundtable and Career Information Expo in October 2017. Jeanette Manfra, Assistant Director for Cybersecurity for the DHS Cybersecurity and Infrastructure Security Agency, served on a panel along with regional cybersecurity leaders from academia, government, and military sectors.





# UNIVERSITY OF WISCONSIN-STOUT



University of Wisconsin - Stout is a comprehensive, career-focused, polytechnic university. Our students, faculty and staff use applied learning, scientific theory and research to solve real-world problems, grow the state's economy, and serve society. Located in scenic Menomonie, Wisconsin, our campus has a long and rich history of providing a distinct array of programs. Our students enjoy a 98.2% rate of finding employment or continuing their education after they graduate. We're proud of our tremendous industry partnerships and our contribution to the local and regional economy.

UW-Stout Computer Networking & Information Technology (CNIT) program provides students with the strong technical, communication, teamwork, leadership, and problem-solving skills that students need to succeed. Students take courses in emerging fields such as:

- Ethical Hacking and Pen Testing
- Virtualization
- Wireless Networking and Security
- Network Infrastructure
- Server Administration
- Linux/Unix Network Administration
- Cloud Computing Design, Implementation, and Security
- Python, Java, C++, Web Programming and Network Automation
- Project Management

CNIT students are required to do capstone projects with IT Industry partners before graduation. Many of our students have internship or co-op experience. The CNIT program path has been used as a program path for getting the CAE designation in November 2017.

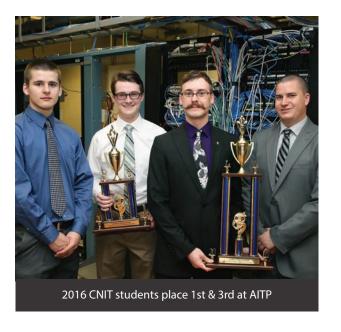
### **DESIGNATIONS**

• CAE - Cyber Defense Education

### CONTACT INFORMATION

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www.uwstout.edu





### WALDEN

A higher degree. A higher purpose.



Walden University was founded in 1970 and is accredited by the Higher Learning Commission (HLC), which accredits degree-granting postsecondary educational institutions in the north central region of the United States. Walden enrolls more than 54,000 students in bachelors, master's, and doctoral degree programs and specialized certifications. The university offers degrees from bachelor's to doctoral level with cybersecurity specializations.

Walden's cyber defense programs have a dedicated online repository, where the university's official Cyber Center of Education has been established. The Cyber Center includes publications, presentations, and cybersecurity related content. The Cyber Center was established prior to Walden's first CAE-CD designation in 2013.

In 2013, Walden established a Doctor of Information Technology (DIT) program. Many doctoral graduates have published dissertation research in the field of cyber defense. Moreover, Walden faculty members have published numerous articles in peer-reviewed journals, such as IEEE and ACM publications, and they have also conducted presentations and participated in nationally recognized security conferences, including CISSE and NICE.

Walden is also committed to collaboration and supporting the business community nationwide, which includes workshops for high-schools, 2-year colleges, and small to medium-size businesses.

### **DESIGNATIONS**

• CAE - Cyber Defense Education

### **CONTACT INFORMATION**

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# WAUKESHA COUNTY TECHNICAL COLLEGE



The vision of Waukesha County Technical College Center for Cybersecurity Education is to provide world-class cybersecurity education to future workforce professionals, businesses and institutions. Our objective is to provide a venue for education and research in information assurance, computer network security, digital forensics, cryptography, risk assessment and mitigation, disaster recovery and business continuity management, security regulations and compliance, and information security management.

The WCTC Center for Cybersecurity Education resides within the School of Business located on the main campus of Waukesha County Technical College at 800 Main Street in Pewaukee, Wisconsin.

Waukesha County Technical College was the first

college in Wisconsin that has been recognized by the National Security Agency and the Department of Homeland Security as a National Center of Academic Excellence in Information Assurance / Cyber Defense education (CAE-2Y). This designation helps our students as they enter the workforce or transfer to four-year schools, conveying that they graduated from a program nationally recognized for its excellence and alignment to the highest information security standards for two-year college education.

WCTC's cybersecurity programs offer multiple degree and certificate options that lead to the CAE-2Y designation and opportunities to transfer to complete a 4-year bachelor degree. Many student activities extend learning beyond the classroom and enhance professional development.

### **DESIGNATIONS**

• CAE - Cyber Defense 2-Year Education

### CONTACT INFORMATION

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wctc-cce.org





# WEST VIRGINIA UNIVERSITY



West Virginia University has been an active participant in the CAE program since 2006, and currently holds both the CAE-CDE (4 year institution) and CAE-R designations. The primary curriculum program path for the program is through the Lane Department of Computer Science & Electrical Engineering (LCSEE) in the Statler College of Engineering & Mineral Resources. Students may pursue studies in the Cyber field through undergraduate majors in Biometric Systems, Computer Science or Computer Engineering, or through graduate majors in Computer Science. In 2018, we had 38 undergraduates and 52 graduates pursuing studies in this CAE area, including 13 students who completed the BS Biometric Systems degree and 34 students who completed their MS Computer Science degree.

During the past year, WVU has approved two new degree programs focusing on cybersecurity. The

#### **DESIGNATIONS**

- CAE Cyber Defense Education
- CAE Cyber Defense Research

### **CONTACT INFORMATION**

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Icsee.statler.wvu.edu/cecd

Department of Management Information Systems in the Chambers College of Business & Economics will be offering a new MS degree program in Business Cybersecurity, and the LCSEE department will be offering a new BS degree program in Cybersecurity. The BS Cybersecurity degree program has been designed specifically to map the CAE Knowledge Units and the NIST framework. Both degree programs began accepting students in Fall 2018.

WVU has an active research program in the field of cybersecurity, with multiple research projects externally sponsored by the National Science Foundation, the US Department of Justice, and from private industry. Research activities in the fields of biometrics, malware detection, and digital forensics are nationally recognized. WVU Faculty Member Yanfang (Fanny) Ye and her students received the Best Paper Award from the 2017 ACM International Conference on Knowledge Discovery and Data Mining (ACM SIGKDD) for their paper "HinDroid: An Intelligent Android Malware Detection System Based on Structured Heterogeneous Information Network" which demonstrated how machine learning techniques could significantly improve malware detection on Android Devices.





# WHATCOM COMMUNITY COLLEGE



**Whatcom Community College** is a National Center of Academic Excellence in Cyber Defense Education.

Located in Bellingham, WA and serving nearly 11,000 students annually, Whatcom Community College was one of the first community colleges to earn the CAE designation in 2011. According to the Aspen Institute (2016), WCC is rated among the top nine community and technical colleges in the state and recognized as one of the leading community colleges in the nation.

Students at Whatcom choose from a number of paths toward 2- and 4-year degrees in cybersecurity including an associate of science degree, an associate of applied science transfer degree, a bachelor of applied science degree in IT networking-cybersecurity, or highly valued

certifications including Cisco CCNA, Comp Tia's A+ and Security+, cloud security, and more.

Enrollment in cybersecurity courses at WCC increases dramatically year over year. Female student enrollment increased 83% since 2013 and veteran enrollments consistently average around 25% of students. Most importantly, over 400 Whatcom Community College cybersecurity graduates are prepared for careers in the cybersecurity field today, and the number of graduates steadily increases each year.

### **DESIGNATIONS**

• CAE - Cyber Defense 2-Year Education

### CONTACT INFORMATION

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# WORCESTER POLYTECHNIC INSTITUTE



#### Worcester Polytechnic Institute's (WPI)

cybersecurity programs prepare students to be effective leaders in a world where actual and potential digital cyberattacks and security threats can disrupt entire industries. With the skills to keep systems secure and the drive to remain a step ahead, WPI's cyber students are committed to making the world safer.

Multidisciplinary teams work within four distinct research areas: Analysis, Architecture, Principles, and Security Mechanisms/Functionality. They tackle subjects as varied as cryptography and cloud computing to forensics and authentication, so students learn to approach challenges from several angles and in team settings.

Students are involved in all aspects of cybersecurity

from the beginning of their studies and may apply for the National Science Foundation's CyberCorps® Scholarship for Service initiative. WPI's undergraduate curriculum allows for exploring and developing preemptive measures, comprehensive solutions, and ongoing safeguards.

Graduate students may choose between an industry-focused non-thesis track or a research-intensive thesis track program. Either choice allows for independent study and research under the guidance of an engaged advisor. Graduates are sought after for jobs in academia, industry, and government. WPI's cybersecurity program supports real-world impact in a field where employees are in high demand.

### **DESIGNATIONS**

• CAE - Cyber Defense Research

### CONTACT INFORMATION

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