

Information Technology / Cybersecurity in the State University System

June 2021

Executive Summary

The fields of information technology and cybersecurity are essential to Florida's economy. More than 34,000 high-tech companies call Florida home, and the IT workforce has become integral to every facet of business and government. The CompTIA Cyberstates 2020 report indicated that Florida ranked fourth nationally in net tech employment and third in the total number of new tech jobs added. The State University System's (SUS) degree productivity in the field of IT/Cyber has been growing along with the industry. System-wide, the number of graduates has increased by 29% over the last five years, with a significant 36% growth at the undergraduate level and a 14% increase at the graduate level.

Degree programs that feed into the information technology sector are offered at all twelve SUS institutions. These include options such as artificial intelligence, informatics, computer science, data modeling, computer engineering, cyber/electronic operations and warfare, data science, business analytics, cyber/computer forensics, management information systems, and more. The SUS produced over 10,400 graduates in 2019-20 with the potential to gain employment in the IT industry. This total included over 2,000 computer and information sciences majors and more than 1,000 information technology majors. For further and more detailed data, please reference the supplemental document titled "Degrees Awarded in Academic Programs Potentially Leading to Careers in the Information Technology/Cybersecurity Industry." The supplemental document contains detailed graduate counts by program, institution, and degree level.

Florida public universities have been recognized by rankings organizations for excellence in IT-related academic programs. For example, U.S. News & World Report recognized Florida State University as being ranked #2 among public institutions for its online graduate Information Technology program and #11 among public institutions for its online MBA in Business Analytics. U.S. News also recognized the University of Florida as having the #12 graduate Computer Engineering program and the #18 best undergraduate Computer Engineering program. More detailed rankings information can be found in the document titled "Institutional Responses Regarding Information Technology/Cybersecurity Activity in the State University System."

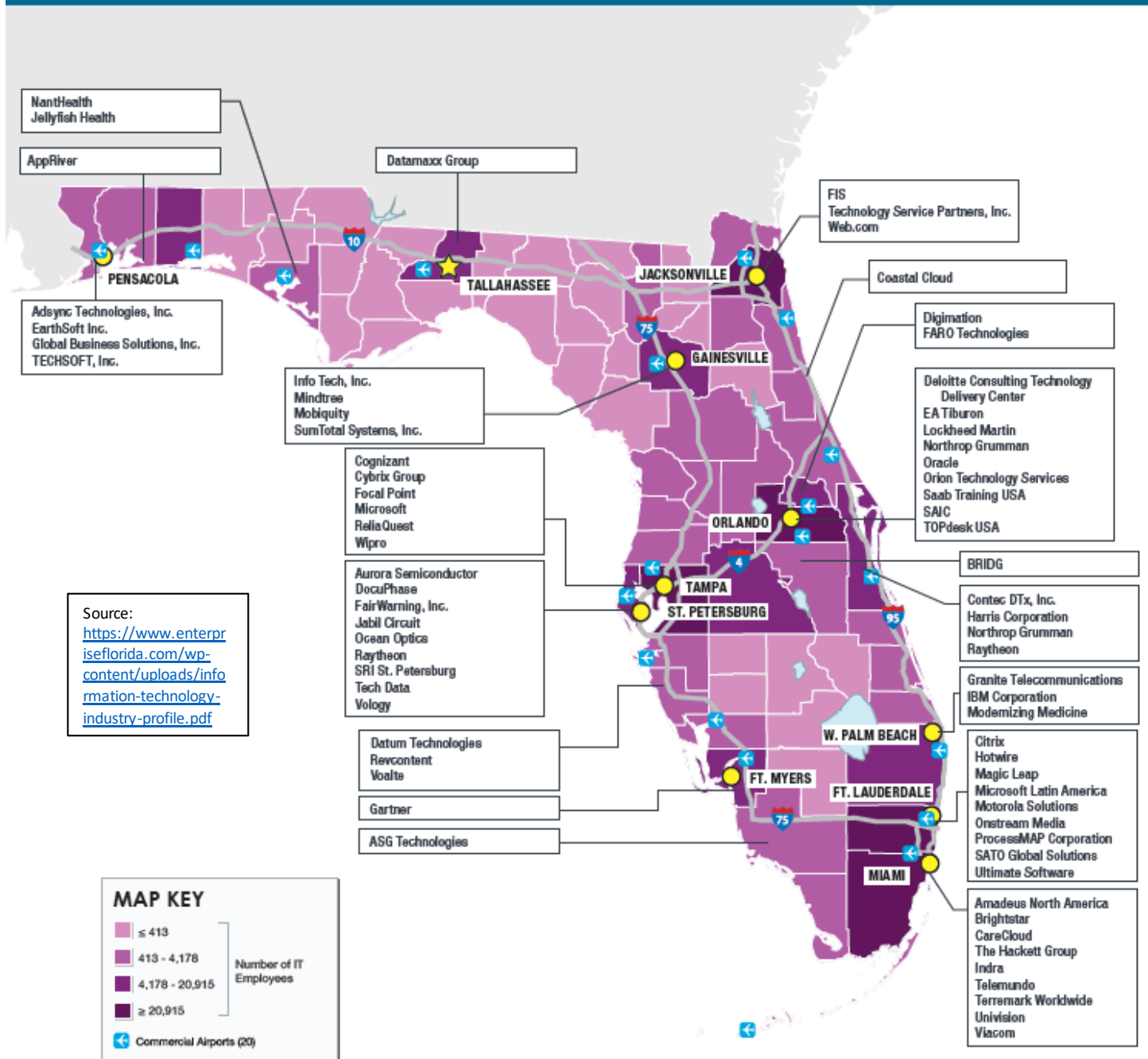
It is also noteworthy that several SUS institutions field nationally competitive teams in programming and cybersecurity. For example, the University of Central Florida's Cybersecurity Competition Team is the 2021 national champion for the Raytheon cyberdefense national championship. The team, stemming from UCF's Collegiate Cyber Defense Club, has also won three national championships (2016, 2015, 2014) and finished as national runner-up three times (2020, 2019, 2018).

Additionally, the University of West Florida Center for Cybersecurity has been designated as the National Security Agency Centers of Academic Excellence Regional Hub for the Southeast United States, in partnership with CyberFlorida hosted at the University of South Florida. CyberFlorida, also known as The Florida Center for Cybersecurity, was established by the state to integrate and leverage cybersecurity education, research, and outreach efforts across the SUS in order to establish preeminence in the field.

Finally, Florida institutions partner with a vast array of companies regarding membership on advisory boards, student internships, full-time employment opportunities, and more. Thousands of leading IT companies operate in Florida, such as AppRiver, Citrix, Oracle, and Raytheon. See the next page of this document for a map from Enterprise Florida showing Florida's information technology cluster with the locations of select companies highlighted as well as employment density.

FLORIDA'S INFORMATION TECHNOLOGY CLUSTER

(select companies highlighted)



Source:
<https://www.enterpriseflorida.com/wp-content/uploads/information-technology-industry-profile.pdf>

- 27,000+** Information Technology Establishments (OCEW)
- 237,000+** Information Technology Professionals (OCEW)
- #4** High Tech Employment in the United States (OCEW/TIA)
- #3** State for High-Tech Employment Growth (OCEW/TIA)
- A-Z** Florida IT: Augmented Reality to ZigBee Developed Here
- \$8+B** Annual R&D Spending (NSF)

The following is a sampling of the numerous IT/Cyber highlights provided by SUS institutions. For more detailed information, please refer to the document titled "Institutional Responses Regarding Information Technology/Cybersecurity Activity in the State University System."

Florida Agricultural & Mechanical University

- The FAMU College of Science and Technology (CST) Department of Computer and Information Sciences (CIS) currently offers a Bachelor of Science in Computer Information Technology. In addition, it offers a minor in Cybersecurity and certificates in Cybersecurity and Health Information Privacy and Security. These programs prepare students to use and support the appropriate use of computer technology in cybersecurity to meet diverse business, government, and education needs.
- FAMU is currently working on developing Bachelor and Master of Science in Cybersecurity programs.
- FAMU is engaged in big data science, engineering and analysis, visualization, simulation, modeling, artificial intelligence, text analysis, behavior analytics, health determinants impacting ethnic/racial disparities in COVID-19, and social determinants with neurodegenerative diseases.
- The Department of Homeland Security and the National Security Agency designated FAMU as a Center of Academic Excellence (CAE) in Cyber Defense Education (CDE) based on the university's robust degree programs and close alignment to specific cybersecurity-related knowledge units validated by top subject matter experts in the field.

Florida Atlantic University

- The College of Business has a number of activities that support the cybersecurity and information systems industry in Florida. Most of this work is centered in the Department of Information Technology and Operations Management and cybersecurity in accounting information systems and fraud.
- U.S. News & World Report
 - #147 Best Graduate Computer Science Program
 - #191 Best Overall Undergraduate Computer Science Program
 - #122 Best Graduate School Ranking Engineering Specialties: Computer Engineering

- The undergraduate major in Management Information Systems has experienced 44% enrollment growth since 2014, growing to around 110 graduates annually, with 72% of the graduates employed full-time, the highest rate among all College of Business majors.
- Graduate programs include the Master of Science in Information Technology Management program, which has had 100% placement for the 7th year in a row; an MBA concentration in Business Analytics; a Big Data Graduate certificate; a Master of Science in Supply Chain Management (newly created); and a Master of Science in Business Analytics (newly created).
- In 2020-2021, FAU had 12 local information technology companies conducting information sessions and engaging with students. These companies included Rocket Matter, Simplify, Modernizing Medicine, ADT, Shipmonk, Anthology, Citi Bank, Ultimate Software/UKG, Microsoft, Wheelhouse IT, SBA Communications, AutoNation, Office Depot, Citrix, FlexShopper, and RPU Metrics.

Florida Gulf Coast University

- The Software Engineering Department at FGCU is the only software engineering program in the SUS. This department will develop and offer an undergraduate concentration in cybersecurity within the next two years.
- The Information Systems/Operations Management department at FGCU offers two courses at the undergraduate level, one at the graduate level, and is planning a cybersecurity concentration at the undergraduate level.
- FGCU has a license agreement with the IBM Skills Academy to offer skills-oriented information technology training and digital badge (certificate) programs in artificial intelligence, blockchain, cloud computing, cybersecurity, data science, design thinking, internet of things, and quantum, starting in fall 2021.

Florida International University

- FIU ranks in the top 3 public universities in the country in Information Technology bachelor's degrees awarded according to data from the National Center for Education Statistics. FIU also ranks in the top 15 public universities in the country in Computer and Information Systems Security/Information Assurance Master's degrees awarded.
- Starting in the fall of 2021, FIU is offering a master's degree in the Internet of Things (IoT) that will prepare graduates for careers in the ever-evolving tech industry, including smart homes, smart grids, smart transportation, and smart medical devices.

- As part of FIU's College of Engineering & Computing degree offerings, the graduate program aims to prepare students for jobs in IoT hardware, programming, cybersecurity, communications, and entrepreneurship. Graduates of the program will be equipped to implement IoT technologies used in daily life, including electric and smart cars, homes, medical devices, and city infrastructure. The curriculum further expands on FIU's bachelor's degree in Internet of Things, which the university launched in the spring of 2018, becoming one of the first in the nation to offer a bachelor's degree in the IoT area.

Florida Polytechnic University

- Florida Polytechnic University will offer the state's first bachelor's degree in cybersecurity engineering beginning in the fall 2021 semester.
 - The new cybersecurity engineering degree will feature concentrations in industrial control systems security, smart-grid and cyber-physical security, and hardware security. While other cybersecurity programs focus more on data and software, which traditionally fall under computer science, this new engineering degree will center mainly on securing hardware, networks, and platforms.

Florida State University

- FSU is meeting the needs of the Information Technology and Cybersecurity industries in Florida with a varied portfolio of programs that address the broad needs of these industries. Whereas FSU offers traditional academic programs in Computer Science, Electrical and Computer Engineering, and Management Information Systems, it complements those with many new majors designed to meet workforce needs in areas like Information Technology, Cybersecurity, Cyber Criminology, and new graduate programs in Interdisciplinary Data Science and Business Analytics.
- U.S. News & World Report
 - #5 Best Online Graduate Program in Information Technology
 - #2 among public universities
 - #16 Best Online MBA in Business Analytics
 - #11 among public universities
- FSU has over 110 alumni leading Florida IT/Cyber organizations such as: Cisco Systems, Inc., Citrix, Equifax Workforce Solutions, Microsoft, Oracle, Tech Data, and Workday.

- FSU partners with many leading IT and cybersecurity companies throughout Florida and the U.S. The FSU Job Shadow program has paired over 800 FSU students with working professionals. These students observe professionals performing their job functions to learn more about the IT or cybersecurity industries. Many of these professionals continue as mentors for these students. FSU also has over 700 business partners that have recently hosted students for an extensive internship lasting one semester or a year.

New College of Florida

- The Applied Data Science Graduate Program partners with the following corporations: Allen Institute, LexisNexis, Novetta, and HPCC Systems.

University of Central Florida

- The University of Central Florida (UCF) has a demonstrated record of contributions and excellence in information technology and cybersecurity talent, faculty expertise and research, and collaboration with industry. UCF aligns teaching, research, and service with the evolving needs of the regional and local economy and focuses on helping large corporations, government, and the military meet increased demand for information technology and cybersecurity professionals.
- Information technology and cybersecurity education are embedded in major degree programs throughout the university, including Business Management, Computer Science, Digital Forensics, Engineering, Hospitality Management, Information Technology, Modeling and Simulation, Physics, and Statistics.
- U.S. News & World Report
 - #82 Best Computer Science Program
 - #51 among public universities
 - #16 Best Online MBA in Business Analytics
 - #11 among public universities
- UCF ranks in the top 5 public universities in the country in Computer Science bachelor's degrees awarded according to data from the National Center for Education Statistics.
 - #8 for computer science degrees awarded to African-American students
 - #2 for computer science degrees awarded to Hispanic students

- UCF's Cybersecurity Competition Team is the 2021 national champion for the Raytheon cyberdefense national championship. The team, stemming from UCF's Collegiate Cyber Defense Club (HACK@UCF), has also won three national championships (2016, 2015, 2014) and finished as national runner-up three times (2020, 2019, 2018). The club enables students to enhance their computer security skills, learn ethics, and gain training and experience with defensive and offensive security strategies. The competition team has also won national championships in the College Penetration Testing Competition (2016) and the Department of Education Cyberforce competition (2018).
- Outstanding internship experiences bolster UCF's talent pipeline at companies of all sizes where students gain real-world skills. These companies include Amazon, Apple, Microsoft, Facebook, Snapchat, L3Harris, Darden, Crowd Strike, and Disney. Other companies that hire UCF graduates for cybersecurity and I.T. roles include Google, Abbott Laboratories, Capitol One, Mandiant, Cisco, Lockheed Martin, Northrop Grumman, BlueCross/Blue Shield, and Raytheon.

University of Florida

- Over the past 36 months, UF faculty in Computer and Information Science and Engineering have published 255 articles, 282 conference proceedings, and 8 book chapters. They also received 4 awards and 3 patents.
- The Florida Institute for Cybersecurity Research was established to be the nation's premier multidisciplinary research institute in the advancement of cybersecurity as a basis for long-term partnership and collaboration among industry, academe, and government. The center directly supports the research needs of industry and government partners in a cost-effective manner with pooled resources and a diverse set of top-quality graduate and undergraduate students.
- The Department of Computer & Information Science & Engineering has many important partnerships that support education and research. Three important relationships are with Infotech, Ultimate Kronos Group, and the Royal Bank of Canada (RBC).
- U.S. News & World Report
 - The Graduate Computer Engineering program is ranked #12 among public institutions
 - The Graduate Computer Science program is ranked #30 among public institutions
 - The Undergraduate Computer Engineering program is ranked #18 among public institutions

University of North Florida

- The School of Computing is collaborating with Pax Technology Inc., a manufacturer and distributor of secure payment devices, to develop innovative "smart retail" and "smart access control" solutions. Smart retail is where retail displays and dispensers are retrofitted with A.I. and sensory devices to personalize consumers' experience and provide new types of services. Smart access control is where smart locks can be installed within organizations, such as university campuses, enable integration with wearable devices (e.g., smart watches) and provide additional services (e.g., taking class attendance).
- The College of Computing, Engineering, and Construction is partnering with Google Cloud to organize an inaugural event in fall 2021 for startups and entrepreneurs to pitch their I.T.- and fintech-related ideas and connect to UNF students and alumni.
- In 2019, UNF was designated a National Centers of Academic Excellence in Cybersecurity for Cyber Defense Education (CAE-CD) from the National Security Agency.

University of South Florida

- USF has notable programs in computer science, computer engineering, information technology, cybersecurity, artificial intelligence, machine learning, data science, information systems and management, cybercrime, digital forensics, cyber intelligence, and information security. As a leader in STEM education, USF is proud of its efforts in actively filling the talent pipeline for industry and government to meet the expected job growth in the next decade for careers in I.T./cyber.
- USF graduates are consistently placed in top companies in the Tampa Bay region and nationwide, such as CAE, Raymond James, JP Morgan, Johnson and Johnson, ReliaQuest, Raytheon, G.M., Google, IBM, Twitter, and Intel, to name a few. Top industrial research labs such as Google, Amazon, Intel, Microsoft, Jet Propulsion Labs employ USF MS and Ph.D. graduates. Many Ph.D. graduates are excelling as faculty members at top academic institutions.
- The recently established M.S. in Cybercrime program in the College of Behavioral and Community Sciences (BCS) is a fully online program designed to provide students with an in-depth understanding of major issues in criminology related to cybercrime. This unique program produces a highly skilled labor force to fill the extreme shortfall in digital forensic examiners, cyber incident response personnel, and cybercrime investigators across Florida and the nation.

- The School of Information (iSchool) is home to the Strategic and Cyber Intelligence Program, a federally designated Intelligence Community Center of Academic Excellence. The School offers a Bachelor's of Science in Information Science with a concentration in Information Security, a Graduate Certificate in Cyber Intelligence, and two distinct graduate-degree pathways for cyber intelligence professionals with differing levels of technical focus.
- The Muma College of Business has eight current faculty members who are Fulbright scholars, including three in the School of Information Systems and Management.
- USF hosts The Florida Center for Cybersecurity, which the state established to integrate and leverage cybersecurity education, research, and outreach efforts across the SUS to establish preeminence.
 - Cyber Florida administers the Florida CyberHub, a cost-effective, cloud-based platform that provides a suite of resources to support cybersecurity education and research. The CyberHub includes a cyber range, a secure sandbox for safe malware analysis, desktop-as-a-service to provide easy access to software, and a virtual city that students can practice attacking and defending to better understand the mechanics of a cyber attack. The Florida CyberHub currently supports hundreds of SUS and K-12 students each semester.

University of West Florida

- UWF's Bachelor of Science in Cybersecurity program is Florida's first stand-alone undergraduate program in cybersecurity designated as a National Center of Academic Excellence in Cyber Defense Education program by the National Security Agency. The program has grown from 21 students in 2018 to 252 students last fall semester.
- The UWF Cybernauts student team won Best in Defense, Best in Service, and won 2nd place overall at Southeast Collegiate Cyber Defense Competition (SECCDC), 2020.
- U.S. News & World Report
 - #31 Best Online Master's in Information Technology Programs Offering Computer Science

- The UWF Center for Cybersecurity
 - is designated as a National Center of Academic Excellence in Cybersecurity by the National Security Agency.
 - serves as the National Centers of Academic Excellence (CAE) Regional Hub for the Southeast U.S.
 - hosts and manages the Cybersecurity for All Program, recognized among the 2020 Innovations in Cybersecurity Education by National CyberWatch Center.
 - is a national leader in cybersecurity workforce development, and leads the National Cybersecurity Workforce Development Program.
 - offers the prestigious CyberCorps Scholarship for Service Program, which provides full scholarships, stipends and professional development opportunities for UWF students and prepares them for positions with federal executive agencies.
 - launched the Florida Women in Cybersecurity Affiliate.

- UWF has extensive industry partnerships regionally and nationally, including
 - AppRiver
 - BAE Systems
 - Booz Allen Hamilton
 - General Dynamics IT
 - IBM
 - KPMG
 - Navy Federal Credit Union
 - Northrop Grumman
 - Raytheon
 - Regions Bank
 - Trend Micro