

**State University System
Education and General
2020-2021 Legislative Budget Request
Form I**

University(s):	The University of West Florida
Issue Title:	A Cyber Coast for Florida's Future
Date Issue Approved by University Board of Trustees:	BOT Approval 9-19-19 Meeting
Recurring Funds Requested:	15,284,183
Non-Recurring Funds Requested:	
Total Funds Requested:	15,284,183
Please check the issue type below:	
Shared Services/System-Wide Issue for Fiscal Year 2020-2021	<input type="checkbox"/>
Unique Issue for Fiscal Year 2020-2021	<input checked="" type="checkbox"/>

I. Description

The University of West Florida has won national recognition for taking on a big problem facing Florida – cybersecurity workforce readiness.

In 2014, the University set up the UWF Center for Cybersecurity. In short order, the Center won the unique designation as The Regional Resource Center for the NSA/Department of Homeland Security Centers of Academic Excellence. In this role, UWF provides leadership in cybersecurity education and workforce development across the Southeast, supporting colleges and universities in Florida, Alabama, Georgia, South Carolina, Mississippi and Puerto Rico.

Since then, UWF’s Center for Cybersecurity has moved quickly to establish programs of excellence and has been recognized by the NSA as a model for how universities should structure their cybersecurity programs. Noteworthy achievements include the following:

- Florida’s first stand-alone B.S. degree in Cybersecurity and the first to be designated by the NSA and Department of Homeland as a National Center of Academic Excellence in Cyber Defense.
- The Florida Cyber Range, launched to enhance hands-on skills development via education, training and competitions.

- The Cybersecurity for All program to enhance cybersecurity workforce development. Through this program, UWF has enhanced cybersecurity workforce readiness for State of Florida personnel through partnerships with the Florida Department of Management Services and the Florida Department of State.

The Opportunity

“Pensacola, Escambia County, and the Gulf Coast region have the unique opportunity to create the world’s best public and private sector cyber partnership, making the ‘Cyber Coast’ a recognized world leader in Cybersecurity.” --Brig. Gen. Gregory J. Touhill USAF (ret), First U.S. Chief Information Security Officer 2016-2017

The recession-resilient cybersecurity industry is exploding in Northwest Florida. Growth is limited only by availability of talent. The cybersecurity skills gap and shortage of skilled workforce are well-known problems. A cybersecurity jobs heat map, Cyber Seek, currently indicates more than 313,000 unfilled cybersecurity jobs across the country, with more than 13,000 unfilled jobs in Florida.

Northwest Florida is ahead of the curve as an emerging area of strength in cybersecurity. In Pensacola, Corry Station houses the Navy’s Center for Information Warfare Training, a classified school for NSA military personnel, and the National Cybersecurity and Communications Integration Center. The U.S. Cyber Command is developing a training center here as well. In Fort Walton Beach, Hurlburt Field has an education and training complex for Air Force Special Operations including cybersecurity. Many industry leaders in cybersecurity have offices and major contracts in Northwest Florida including Raytheon, General Dynamics, Booz Allen Hamilton and Boeing Global.

With a significant increase in resources for cybersecurity talent development, UWF can be a catalyst for expanding the cybersecurity industry, attracting more high-wage jobs to the state, and winning national and global recognition for Florida’s Cyber Coast.

The Plan

Building on UWF’s established strengths and accomplishments, the University aims to advance Florida as the world’s premier leader in cybersecurity workforce readiness and resiliency.

This will be accomplished through innovative and scalable academic and workforce development actions as follows:

- Create a UWF Department of Cybersecurity, the first such department in a Florida university, to expand multidisciplinary cybersecurity curricula and research.

- Expand the UWF Center for Cybersecurity capabilities for education, workforce development, research and outreach.
- Develop competency-based and high-impact learning programs to prepare students for cybersecurity careers.
- Target and incentivize diverse populations for cybersecurity careers and workforce development, including veterans and underrepresented groups.
- Implement programming for cybersecurity career readiness, student success and timely completion.
- Facilitate a cybersecurity community of practice and partnerships to expand career readiness and pipelines.

The Specifics

Create a UWF Department of Cybersecurity to expand multidisciplinary cybersecurity curricula and research

In order to build and support the needed multidisciplinary curricula and research, the university requires cybersecurity faculty and staff who not only understand industry needs, but are flexible and resilient to the fast-paced changing nature of Cybersecurity. A multidisciplinary Cybersecurity program means that faculty should be recruited outside of Computer Science and Information Technology, where Cybersecurity programs are typically housed. Thus, a Department of Cybersecurity can provide the means to better build multidisciplinary curricula and better recruit multidisciplinary faculty.

The college currently has a B.S. degree program in Cybersecurity and a M.S. degree program in Cybersecurity, both of which are BOG programs of strategic emphasis. With a Department of Cybersecurity, UWF will have the capability to expand the degree programs to include security management, critical infrastructure security, homeland security, and other non-technical areas so that Cybersecurity.

The multidisciplinary curricula will also include high impact practices. We propose updating and expanding the UWF Battle Lab. The Battle Lab is a high-tech computing lab to support research, teaching, and outreach in network and system security.

We additionally propose creating a Cyber-Physical Systems lab and a Cyber Forensics lab for the curriculum. The Cyber-Physical Systems lab will introduce students to the Internet of Things devices, critical infrastructure, and sensor and communication systems which all interface the digital and physical domains. The Cyber Forensics lab is an environment where students investigate advanced cyber-crimes and the analysis and prevention of next-generation malware attacks.

The Department of Cybersecurity will support a Cybersecurity Honors program. High-impact practices such as undergraduate research experiences will also be required of honors Cybersecurity students. This program will produce honors Cyber graduates who are in high demand by employers and graduate schools.

To meet overall cybersecurity workforce needs, we propose to double Cybersecurity and Cyber-related program enrollment – from approximately 750 students to over 1,500 students during a 5-year period. The resources needed to dramatically increase program enrollment, to support student success, and for UWF to become the premiere institution for Cybersecurity education are:

- Faculty and staff for a Department of Cybersecurity.
- Faculty to support an increase in sections of lower division courses and other courses impacted by Cybersecurity.
- Staff to support college infrastructure impacted by Cybersecurity.
- Success initiatives aimed at cybersecurity and cybersecurity-related students (see section 3).

Expand the UWF Center for Cybersecurity capabilities for education, workforce development, research and outreach

To address the demand for a well-qualified cybersecurity workforce for our region and state, UWF developed the Cybersecurity for All Program. This program significantly expands the cybersecurity workforce across the state and nation, and increases the number of qualified cybersecurity professionals, including among under-served and under-utilized populations. The Program’s innovative approach integrates:

- Development of core cybersecurity training courses that align with the NIST NICE National Cybersecurity Workforce Framework.
- Development of additional course modules to customize the program for various audiences, including K12 students and teachers, businesses, government agencies, military and veterans, and for emerging needs, including critical infrastructure, cloud security, Internet of Things and industrial control systems security.
- Online delivery of these training programs and courses that includes virtual, hands-on learning experiences using the Florida Cyber Range.
- Development of pathways for students who complete these courses to cybersecurity careers and degree programs.
- Expansion of the Cybersecurity Ambassadors program to increase cybersecurity awareness, interest and skills among diverse populations and build a strong, diverse talent pipeline.

The Florida Cyber Range provides cutting-edge competency-based hands-on training and operations to detect and defend against cyber threats and attacks. The Florida Cyber Range provides a state-of-the-art, powerful, realistic training environment to support cyber exercises, operations and competitions for government, military and academia, and facilitate the development and testing of innovative cyber threat detection, defense and response solutions.

Through the Cybersecurity for All Program, the UWF Center for Cybersecurity partnered with the Department of Management Services to provide cybersecurity

training for state personnel and enhance cybersecurity skills and resiliency across state agencies. The Center also partnered with the Florida Department of State to provide training for elections supervisors and IT personnel and enhance elections security, providing training in four major Florida cities to elections personnel from all counties ahead of the 2018 elections.

Continued investment in this program will allow us to continue to enhance cybersecurity preparedness, expand the cybersecurity workforce across the region, state and nation, and increase the number of qualified cybersecurity professionals.

As we continue to see growth in the cybersecurity field there is a need to expand our program offerings to our Emerald Coast location in Fort Walton Beach. This area is home to some of the most important Air Force bases in the country and expanding cybersecurity operations in both the Army and Air Force. UWF is seeking to expand UWF Center for Cybersecurity programs to the Fort Walton Beach location and increase program and certification offerings to current and recently discharged military members seeking to get into or improve their skills in the cybersecurity industry.

The UWF Center for Cybersecurity will establish a national model of workforce development by designing and delivering high impact learning practices through competency-based, learner-centered, modular curricula. Educating and training existing and future workforce will involve:

- Designing and delivering competency-based modular courses on scenario-based and project-focused learning through Cybersecurity for All.
- Cutting-edge research incorporated into these courses.
- Using the Florida Cyber Range to integrate real-life, attack-defense scenarios.
- Designing, developing, and offering competition-based practices to create competencies.
- Designing and delivering courses for veterans and other under-represented groups to provide opportunities for them to enter, advance and prosper in cybersecurity work roles.
- Creating cyber courses and competitions using the FCR for state and local government and small and medium businesses to assess their cyber readiness.
- Establishing a Security Operation Center with cutting edge software and hardware solutions that will attract local and regional businesses, government contractors and defense agencies to collaborate with UWF Center for Cybersecurity.

We propose the development of an immersive learning lab that will utilize virtual environments and artificial intelligence to enhance learning outcomes through adaptive student-centered educational experiences. A research lab will be established to enhance collaborations among UWF, SUS and other faculty that emphasize current, emerging and future cybersecurity technologies such as critical infrastructure protection, artificial intelligence, machine learning, grid infrastructure, autonomous surface and aerial

vehicles, block chain technology, healthcare devices, IP protection and renewable energy security.

We will develop a national-level resource for scientific inquiry into cyber adversary tactics, techniques and procedures. The proposed architecture will allow multi-disciplinary study of cyber adversaries without requiring everyone have highly technical cyber expertise. This resource will attract cybersecurity researchers to UWF and Florida SUS institutions, encourage them to join or collaborate with UWF, enhance our position within the cybersecurity community and establish UWF as a national hub for cyber adversary research. This in turn will attract graduate and undergraduate students to the area who will, upon graduation, fill highly sought after cyber workforce roles.

Develop competency-based and high-impact learning programs to prepare students for cybersecurity careers

The Cybersecurity for All program will leverage UWF's strong track record and national recognition in high-impact practices (HIPs) to enhance cybersecurity career readiness. Students will work on research projects with UWF faculty and industry mentors, and will engage in other HIPs, including internships, professional conferences, cyber competitions and competency-based skills development activities. UWF was one of the institutions selected to participate in the NSA/DHS Centers of Academic Excellence Pilot Program for developing and assessing competency-based activities.

UWF offers several programs to encourage and support undergraduate and graduate research, including research support for students and faculty. UWF has strong research activities in a variety of cybersecurity research topics.

Students will develop essential competency-based skills through hands-on activities using the Florida Cyber Range. Students will participate in range-based exercises and cybersecurity competitions which are critically important for cybersecurity career readiness. The activities will be mapped to competencies that align with the NICE Cybersecurity Workforce Framework work roles and CAE Knowledge Units.

Target and incentivize diverse populations for cybersecurity careers and workforce development including veterans and underrepresented groups

In order to reach a total enrollment of over 1,500 students in cyber or cyber-related programs, UWF proposes the following:

- Offer multi-year scholarships to FTIC students to attend UWF to major in Cybersecurity.
- Establish 2+2 articulation agreements within Cybersecurity and Cybersecurity-related areas with each Florida and Alabama community and state colleges.
- Establish 2+2 articulation agreements with the military.
- Offer transfer students 2-year scholarships.

- Guarantee that each student in the program will have an opportunity to either complete an industry certification, an internship or an undergraduate research project.
- Express admit each student in the program with a 3.0 GPA or better to their UWF online graduate program of choice.

The UWF Center for Cybersecurity developed the Cybersecurity for All program to provide training and workforce development opportunities to individuals and organizations, including military, veterans, industry and public sector. The Center will recruit veterans from the area to participate in the Cybersecurity Fundamentals course offered through the Cybersecurity for All program and host events to provide awareness of the growing cybersecurity career opportunities in the area and attract them to UWF undergraduate and graduate cybersecurity programs. Veterans are very highly employable by the government, especially by DHS, DOD, NSA, FBI and CIA, as many of them have active, or can readily obtain, clearance. Attracting this population to UWF and providing them with foundational cybersecurity knowledge, skills, abilities and competencies will create a growing pipeline of future cybersecurity workforce. UWF is well suited to serve this population as we are ranked fifth in the nation as a military-friendly university and have a robust Military and Veterans Resource Center for military, dependents and veteran students.

Implement programming for cybersecurity career readiness, student success, and timely completion.

Northwest Florida’s lagging economy, high poverty and low educational attainment rate translate to many regional students who are highly capable, but severely financially disadvantaged, ethnically underrepresented and often first-generation in college. Financial assistance alone is not enough. Students must be engaged early and often to increase persistence, particularly during their first year. Thus, building a talent pipeline to the cybersecurity workforce requires coordinated, multipronged efforts to mentor, teach, prepare and engage specific student populations. Student engagement programs are founded on nationally-recognized model programs incorporating four key components:

- Academic and social integration,
- Knowledge and skill development,
- Support and motivation, and
- Monitoring and advising.

Faculty resources are crucial in order to expand these time and resource intensive programs. The positions outlined above will support UWF’s scope of expansion, which includes:

- Increasing the STEM LLC to include a multidisciplinary Cyber LLC
- Hosting an annual math boot camp
- Building skills courses within Cyber and Cyber-related programs
- Offering a two-semester sequence STEM for Life Seminar for all STEM FTIC students to ensure every FTIC student (including each cyber student) is

engaged throughout their first year, which includes a common read and semester themes of College Survival Skills and Maximizing/Getting Involved in College

- Redesigning other key STEM gateway courses, that impact Cybersecurity and Cybersecurity-related programs, to improve pass rates
- Engaging more students in undergraduate research beginning in their first year, and

Faculty must engage and mentor students inside and outside of the classroom. Thus, a low faculty to student ratio is critical.

Facilitate a cybersecurity community of practice and partnerships to expand career readiness and pipelines

The program aims to develop a superior cybersecurity workforce through the creation of a scalable and sustainable community of practice. UWF will establish a Cybersecurity Alliance that brings together academia, government and industry to expand the cybersecurity workforce across the state and nation by disseminating best practices and engaging additional employers. Students will be encouraged to participate in the community of practice events to enhance professional and leadership development and career readiness. UWF will develop and expand the Cybersecurity Alliance, disseminate best practices, and engage additional employers across the state to build a scalable and sustainable community of practice and expanding cybersecurity workforce.

The program aims to increase the participation of women and underrepresented students through mentoring by cybersecurity faculty and professionals, K12 outreach and community engagement. UWF recently launched the WiCyS (Women in Cybersecurity) Florida Affiliate. Women cybersecurity professionals and WiCyS Florida members will be recruited to serve as career mentors for female students in the program. These mentors will provide guidance on career readiness and success and professional development and host regular networking and mentoring events. Existing K12 and community outreach initiatives, including the UWF Cybersecurity Ambassadors program, will be leveraged. The Ambassadors visit local area schools to enhance and promote cybersecurity awareness and UWF cybersecurity programs.

The program will involve several outreach activities to enhance cybersecurity workforce development across the state, which are outlined below.

- Annual Cybersecurity Career Day to promote interest in cybersecurity careers, connect with employers, and learn about job and internship opportunities.
- K12 school visits and events to promote interest in cybersecurity programs and careers.
- Annual Florida Cyber Defense Competition.
- Florida Women in Cybersecurity Affiliate events across the state and annual Florida Women in Cybersecurity Conference.

II. Return on Investment

UWF's *A Cyber Coast for Florida's Future* proposal will significantly enhance cybersecurity workforce and economic development in Florida, and will establish Florida as a national leader in cybersecurity workforce development, resiliency and innovation. The Program will establish innovative, sustainable and scalable workforce development models and support the growth of qualified cybersecurity professionals.

The Program has many anticipated benefits, including:

- Increased number of qualified cybersecurity professionals across the region, state and nation
- Increased number of cybersecurity professionals with industry certifications needed for defense work roles
- Increased engagement in cybersecurity careers
- Increased number of students and professionals with core cybersecurity knowledge, skills and abilities (KSAs) in alignment with the NIST National Initiative for Cybersecurity Education Cybersecurity Workforce Framework
- Increased number of students enrolled in cybersecurity courses and degree programs, including under-served and under-utilized populations
- Increased number of pathways for students to pursue postsecondary cybersecurity education at UWF and other Florida institutions
- Increased cybersecurity awareness in K12 school
- Enhanced economic growth
- Enhanced cybersecurity protection and resiliency
- Expanded multidisciplinary cybersecurity courses and programs that include innovative curricula and hands-on learning activities
- Enhanced visibility for Florida as a leader in cybersecurity workforce development and resiliency
- Expanded partnerships among business, government, military and educational partners

Key Partners

Below are some of our key partners, but this is not an inclusive list:

- AFCEA
- AppRiver
- BAE Systems
- Booz Allen Hamilton
- Corry Station
- Defense Information Systems Agency
- Department of Homeland Security
- Eglin Air Force Base & Air Force Research Labs
- Florida Institute for Human & Machine Cognition
- FloridaWest
- Global Business Solutions Inc.
- General Dynamics Information Technology
- Hurlburt Field

- Hixardt Technologies
- IBM
- IT Gulf Coast & ITEN WIRED
- Jacobs
- MacAulay-Brown
- Metova CyberCENTS
- National Flight Academy
- National Security Agency
- Naval Air Station Pensacola
- Naval Education and Training Command
- NAVSEA and Naval Surface Warfare Center
- Navy Center for Information Warfare Training & Command
- Navy Federal Credit Union
- Navy Information Operations Command
- Northrop Grumman
- Raytheon
- Trend Micro

Key Metrics

1. Number of Qualified Cybersecurity Professionals (certifications and trainings)

Program	2019-20	2020-21	2021-22	2022-23	2023-24	2024-25
Cybersecurity for All training	360	360	360	360	360	360
Cybersecurity Industry Certification	240	240	240	240	240	240
Cybersecurity Veterans Program	100	100	100	100	100	100
Total	700	700	700	700	700	700

2. Enrollment in Cybersecurity and Related Programs

Program	2019-20	2020-21	2021-22	2022-23	2023-24	2024-25
Cybersecurity, Bachelor's	217	267	327	387	447	500
Cybersecurity Master's	5	50	75	100	125	150
Other Cyber/IT programs	681	700	730	775	820	900

3. Degrees Awarded in Cybersecurity and Related Programs

Program	2019-20	2020-21	2021-22	2022-23	2023-24	2024-25
Cybersecurity, Bachelor's	30	48	66	84	102	120
Cybersecurity Master's	0	4	35	45	58	70
Other Cyber/IT programs	160	175	183	194	205	225

Additional Metrics

- **Year-one accomplishment or success**
 - The Program creates flexible pathways to enhance cybersecurity career readiness and workforce development. The Program will increase the number of qualified cybersecurity professionals across the region and state by providing training and industry certification preparation to 240 students in year one.

- **Return on investment to the state**
 - The Program will provide education and training to state personnel. The Program will expand cybersecurity workforce development and economic development across the state and prepare individuals to fill open jobs. The Program will provide dynamic training options that meet state and national workforce needs and allow faster transition to the job market.
- **Program improvement over time**
 - The proposed initiatives will significantly enhance and expand UWF's cybersecurity programs and capability to support cybersecurity workforce and economic development across the region and state.
- **Program elevation to excellence and prominence**
 - The Program will advance UWF and Florida as a national leader in cybersecurity education and workforce development, including ABET accreditation for the UWF B.S. in Cybersecurity and NSA/DHS Centers of Academic Excellence (CAE) designation for additional UWF programs.

The Program will also contribute to the following Florida Board of Governors Performance-Based Funding Metrics:

- **Percent of Bachelor's Graduates Employed (\$25,000+) or Continuing their Education**
 - The Program provides dynamic training options that meet state and national workforce needs and allow faster transition to the job market.
- **Median Wages of Bachelor's Graduates Employed Full-time**
 - Cybersecurity jobs command high salaries, averaging approximately \$80,000 for entry-level positions.
- **Bachelor's Degrees Awarded in Programs of Strategic Emphasis**
- **Graduate Degrees Awarded in Programs of Strategic Emphasis**

III. Facilities

	Facility Project Title	Fiscal Year	Amount Requested	Priority Number
1.				
2.				

2020-2021 Legislative Budget Request
Education and General
Position and Fiscal Summary
Operating Budget Form II
(to be completed for each issue)

University: University of West Florida
Issue Title: A Cyber Coast for Florida's Future

	<u>RECURRING</u>	<u>NON- RECURRING</u>	<u>TOTAL</u>
<u>Positions</u>			
Faculty	29.00	0.00	29.00
Other (A&P/USPS)	18.00	0.00	18.00
	-----	-----	-----
Total	47.00	0.00	47.00
	=====	=====	=====
<u>Salary Rate (for all positions noted above)</u>			
Faculty	\$3,875,030	\$0	\$3,875,030
Other (A&P/USPS)	\$1,147,148	\$0	\$1,147,148
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Total	\$5,022,178	\$0	\$5,022,178
	=====	=====	=====
Salaries and Benefits	\$6,458,497	\$0	\$6,458,497
Other Personal Services	\$775,686	\$0	\$775,686
Expenses	\$3,550,000	\$0	\$3,550,000
Operating Capital Outlay	\$2,000,000	\$0	\$2,000,000
Electronic Data Processing	\$0	\$0	\$0
Special Category (Specific)	\$0	\$0	\$0
Financial Aid	\$2,500,000	\$0	\$2,500,000
	\$0	\$0	\$0
	\$0	\$0	\$0
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Total All Categories	\$15,284,183	\$0	\$15,284,183
	=====	=====	=====