University of Colorado
Colorado Springs

Executive Summary
Proposal for
DOCTOR OF
BUSINESS ADMINISTRATION
(w/Cybersecurity Management Emphasis)
Taught in Executive Format

March 2020

Program description

Cybercrime has become a societal menace with increasingly prevalent cybersecurity breaches nowadays. The organizations and governments are spending billions of dollars to address this problem with little impact on reducing cybersecurity breaches. There is an imperative need in industry and government for rigorously trained reflective thinkers at executive level who are able to grasp the technical and organizational challenges inherent in cybersecurity discipline. The Doctor of Business Administration with an emphasis in Cybersecurity Management (EDBA-Cyber) taught in an executive format is a unique terminal degree designed to develop scholarly practitioners who will be skilled in practice-focused research in cybersecurity.

The cybersecurity discipline encompasses business, technical, social, and scientific fields and requires multi-disciplinary knowledge to become a successful practitioner. The three-year, part-time program is designed for the working executives, in particular, Senior Executives with Information Security, IT, Compliance or Auditing experience. The research approach for EDBA is the "engaged scholarship" model that focuses on topics at the intersection of theory and contemporary cybersecurity issues. The focus is on addressing complex cybersecurity problems in organizations through understanding and application of latest research in information security.

The interdisciplinary EDBA-Cyber program aims to develop ethical cybersecurity leaders who can improve cybersecurity practice globally through applied, evidence-based analysis and rigorous evaluation of complex issues in play. This degree will enable our students to successfully employ skills learned to tackle the cybersecurity problems in organizations. The program's instruction will follow blended learning approach involving a combination of traditional face-to-face lectures, online learning, discussions and seminars. The program will involve limited residency cohorts.

The EDBA degree provides potential students with appropriate educational credentials to gain vital edge in a competitive environment. The graduates will benefit from knowledge improvement in cybersecurity, and potential opportunities for career differentiation and advancement into leadership positions. The program is not designed to train students to pursue an academic career as tenure-track faculty.

Student Learning Outcomes

The degree program is designed to equip students with the ability to:

1. Develop skills for cybersecurity scholarship and research competency.
2. Analyze and communicate issues impacting cybersecurity.
3. Demonstrate knowledge of information security research.
4. Apply current research to address complex problems of cybersecurity practice.

The student outcome will be assessed through successful completion of coursework, proposal defense, and successful defense and completion of the dissertation.

Workforce and Student Demand

According to Burning Glass, cybersecurity jobs account for 13% of all IT jobs. The demand for cybersecurity skills has risen 255% since 2013, while demand for risk management rose by 133%. Employer demand for cybersecurity professionals across the United States continues to accelerate with the knowledge of public cloud security (170%) projected to be the fastest-growing cybersecurity skill in demand. According to CyberSeek, a project supported by the National Initiative for Cybersecurity Education (NICE), a program of the NIST in the U.S. Department of Commerce, there are 313,735 cybersecurity jobs openings across US, while 780,000 people were employed in various cybersecurity positions. The Bureau of Labor Statistics estimates that employment of Information Security Analysts is projected to grow by 32% from 2018 to 2028, much faster than the average for all occupations. Cybersecurity Ventures, Cybersecurity analytics and research company, predicts that there will be 3.5 million unfilled cybersecurity positions by 2021. Please refer to table 1 for current demand for cybersecurity jobs.

Table 1. Cybersecurity Demand (Source: www.cyberseek.org)

Role	**Job Openings**	**Average Salary**
Cybersecurity Job Openings in US	313,735	
Cybersecurity Analyst	26,013	$85,000
Cybersecurity Consultant	13,439	$100,00
Cybersecurity Manager or Administrator	14,320	$115,000
Chief Information Security Officer	5,130	$224,388
Cybersecurity PhD (Specialized Roles)	764	$259,000

The State of Colorado has currently 10,207 job openings in cybersecurity (Source: www.cyberseek.org). The Colorado Springs region is home to 125-plus cybersecurity companies as well as five NSA/DHS Centers of Academic Excellence (CAEs) in cybersecurity education. UCCS is one of the designated CAE-Cyber Defense Education institutions. The total cybersecurity industry employment in Colorado Springs is 3,371 with a projected total demand forecast at 6,967 by 2025.

There are about 5,130 job openings for Chief Information Security Officer (CISO) (Source: www.indeed.com). For CISOs, about 40% of them have a master's degree and 4% have a doctorate. While the average early and mid-career salaries of information assurance Ph.D.'s are quite strong, many C-Level information assurance roles can bring in $300,000+. The top 10% of jobs for Ph.D.'s in information assurance bring in $259,000 a year or more, making information assurance the highest paying Ph.D. surveyed in 2018 rankings (www.online-phd-degrees.com).

The proposed EDBA-Cyber program will target students who have completed their graduate degree (Masters) and satisfied the prerequisites for admission to the program. The program is designed for the working executives with a minimum of 5 years of managerial or consultative experience in cybersecurity, information systems, IT, or related field.

There is a significant demand in industry for doctoral programs in cybersecurity. Most professionals need the degree to advance in cybersecurity profession in terms of attaining higher roles/positions, become C-level executive, migrate to lucrative industry (finance, healthcare, consulting), or pursue research career in industry or government. At St. Thomas University, the Executive DBA in Information Security attracted quite a few students resulting in meeting the cap of 10 students per year from Year 1 itself. This program enrolled 20 students by the end of second year with recruitment from South Florida region only.

The EDBA-Cyber will recruit students from across the country focusing on 780,000 professionals currently employed in cybersecurity positions. We will initially target 10 states over three phases (see Table 2).

Table 2. EDBA-Cyber Target States (Source: www.cyberseek.org)

Phase	**State**	**Cybersecurity Workers**	**Cybersecurity Certification Holders**				**Phase Total**
			CISM	**CISSP**	**CISA**	**Total**	
I	Colorado	18,443	312	2729	723	3764	**24625**
	California	78,886	1339	7017	3514	11870	
	Virginia	65,485	1625	4970	2396	8991	
II	New York	45,751	722	2373	1957	5052	**22546**
	Florida	13,465	901	4094	1861	6856	
	Texas	24,835	1136	6163	3339	10638	
III	Georgia	25,418	569	2793	1238	4600	**19574**
	North Carolina	13,078	377	2245	1144	3766	
	Maryland	31,386	846	6101	1180	8127	
	Washington	16,602	304	2062	715	3081	

Among 10 states listed in Table 2, we will focus on holders of cybersecurity expert certifications of Certified Information Security Manager (CISM), Certified Information Systems Security Professional (CISSP), and Certified Information Systems Auditor (CISA). These certifications require significant work experience and understanding of information systems security. We intend to enroll less than 0.1% of cybersecurity certification holders over three phases.

The EDBA-Cyber is a part-time program with limited residency cohorts. It is designed to handle three cohorts of 20 students, for a total of 60 students throughout the 3-year program. The program's instruction will follow blended learning approach involving a combination of in-person lectures, online learning, discussions and seminars.

Role and Mission Criteria

The mission of EDBA in Cybersecurity Management program is to develop scholarly practitioners who will be skilled in practice-focused cybersecurity research and can improve cybersecurity practice globally through applied, evidence-based analysis and rigorous evaluation of complex issues in play.

The mission of the EDBA-Cyber is aligned with the mission of the University as well as the College of Business. The UCCS mission is to "be a comprehensive baccalaureate and specialized graduate research university…offer liberal arts and sciences, business, engineering…programs, and a selected number of master's and doctoral degree programs". The proposed EDBA-Cyber program fulfills this mission by providing a unique professional doctoral program for cybersecurity practitioners.

The mission of the College of Business includes offering "…select master's degrees and professional programs that emphasize principle-based ethical decision making…support innovation and impact in our teaching, research and service." The College realizes this mission by producing intellectual contributions that impact the theory, practice and teaching of business. The proposed EDBA-Cyber program fulfills this mission by offering a unique professional program focused on developing ethical cybersecurity leaders. The program is innovative in nature blending cybersecurity foundations and knowledge with business knowledge and scientific research methods delivered as a part-time program with busy executives. These scholarly practitioners will produce practice-focused intellectual contributions in cybersecurity research and impact the theory and practice of cybersecurity.

Further, the proposed EDBA-Cyber is aligned with UCCS' priority focus on cybersecurity discipline and initiatives. The program also addresses three of the strategic themes (or core strategies) identified for the UCCS 2030 Strategic Plan:

I. Strategy 2: Enhance strategic enrollment and retention efforts to drive long-term stability and sustainability.
II. Strategy 5: Strengthen and expand revenue sources to ensure future growth and improve student affordability and access.
III. Strategy 6: Support competitive programs and initiatives, both existing and new, that show the university's unique value and identity in the higher-education landscape

Duplication

There are 54 programs in EDBA across the world focused on general business that have already been launched or are in implementation stage. There is only one EDBA in Information Security program offered by the St. Thomas University (Miami, FL). However, there is no EDBA program (general or cybersecurity) in the state of Colorado. Further, the College of Business at UCCS does not offer any doctoral program. The proposed EDBA in Cybersecurity Management will be the first doctoral program to be offered by the College.

Institutional Factors

There is no impact on other instructional, research or service programs. The UCCS College of Business does not offer any doctoral program. The College of Engineering and Applied Sciences offers a PhD program in Security focused on technical aspects of cybersecurity. As mentioned in section 4, there is no EDBA program (general or cybersecurity) in the State of Colorado.

The EDBA-Cyber program will utilize existing classroom, laboratory, faculty and student space available to the College of Business in Dwire Hall. The program will involve limited residency cohorts delivered on Friday, Saturday and Sunday. The program classes will take advantage of unutilized classroom and other space in the Dwire Hall. The library already subscribes to journals and research databases that will be required for students in the EDBA-Cyber program.

Regarding faculty resources, we are not asking for any tenure lines initially and intend to sustain the program with funds through tuition via proforma. We plan to readjust qualified faculty with terminal degrees (PhD) from undergraduate program to teach in the EDBA-Cyber program. We will hire adjunct faculty to teach necessary courses at the undergraduate level. The revenues generated from the cybersecurity program can help cover the costs associated with the hiring of adjunct faculty. Additionally, qualified faculty from other University of Colorado campuses may be considered to teach cybersecurity foundations, business knowledge or research method courses.

The proposed EDBA-Cyber will coordinate with other graduate programs at UCCS and across CU system to develop a pathway for students graduating from these programs and offer them a career advancement pathway to purse doctoral education and become cybersecurity leaders.

Cost Description and Source of Funds

Table 3. Estimated Revenues for Cohort of 20							
	Year 1	**Year 2**	**Year 3**	**Tuition (3 credits)**	**Total Tuition**	**Estimated Revenues**	**Estimated Expenditures**
Resident Headcount	6	8	10	$2488	$49,760	$497,600	$403,613
Nonresident Headcount	4	7	10	$4192	$83,840	$838,400	$403,613
Total	**10**	**15**	**20**			**$1,336,000**	**$807,226**