Cybersecurity - Bachelor of Science in Cybersecurity

Core infrastructure including financial, medical and military systems, water, gas and oil pipelines, the electrical grid, communications, weather forecasting, GPS navigation/guidance systems and other critical social systems rely heavily on software and computer systems. These computing-based systems are fundamental to modern society and are constantly under attack and stress from natural disasters and man-made malicious threats ranging from minor crimes to military-style cyberwarfare. To preserve our way of life, it is imperative that we secure and safeguard these critical computer systems. This exigent need has accelerated the growth and advancement of Cybersecurity as a vital and indispensable aspect of our current and foreseeable computing landscape.

The Bachelor of Science in Cybersecurity degree emphasizes core concepts, principles, skills, and robust practices for designing, developing, and maintaining highly-secure computing systems and protecting them from diverse threats and attacks. The program also emphasizes best practices of cybersecurity from a societal, organizational, ethical, and human-factors perspective to provide a comprehensive understanding of this multifaceted field. The courses in the degree program are carefully fine-tuned from the ground-up to provide the necessary depth and breadth to maximize opportunities for graduates to find employment in diverse industries (including hardware, software, health, finance, etc.), the government, military, and academia. Moreover, the curriculum prepares students to pursue professional certifications (such as Network+, Security+, etc.) as needed.

A high school background in computers is not necessary to major in cybersecurity because the program includes introductory courses needed for the major. However, it is desirable to have an interest in analytical thinking and problem solving, an aptitude for mathematics, and a curiosity to delve into the workings of computers and technology.

Cybersecurity graduates are in very high demand. Their salaries are in the top three highest paying jobs in computing fields with a median salary of about $100,000 per year. The demand is so high that 40,000 jobs for security professionals go unfilled in the U.S. each year according to Forbes and employers are struggling to fill 200,000 other cybersecurity-related roles. The US Bureau of Labor Statistics projects cybersecurity analysts to be the fastest-growing employment sector with a growth rate of 31% in the next ten years. These factors collectively make Cybersecurity a lucrative and highly-fulfilling career path. Graduates with the BS in Cybersecurity work in a variety of roles such as "Security analyst", "Cyber defense analyst", "Cybersecurity Analyst", and "Data security analyst", to name a few.

Program Requirements

Code	Title	Credit Hours
Core requirements		
Mathematics/Statistics		
MTH 151	Calculus I	4
MTH 231	Elements of Discrete Mathematics	3
STA 261	Statistics	3-4
or STA 301	Applied Statistics	
Cybersecurity Core		
CEC 111	Imagination, Ingenuity and Impact I	2
CEC 112	Imagination, Ingenuity, and Impact II	2
CSE 174	Fundamentals of Programming and Problem Solving	3
CSE 201	Introduction to Software Engineering	3
CSE 271	Object-Oriented Programming	3
CSE 274	Data Abstraction and Data Structures	3
CSE 278	Systems I: Introduction to Systems Programming	3
CYB 134	Introduction to Cybersecurity	3
CYB 234	System Administration and Scripting for Cybersecurity	3
CYB 235	Computer Network Design and Administration	3
CYB 236	Data Security	3
CYB 331	Software Security	3
CYB 332	Human, Organizational, and Societal Security	3
CYB 334	Network Security	3
CYB 335	Defensive Security	3
CYB 435	Offensive Security	3
CYB 437	Cybersecurity Senior Design Project/ Capstone	3
CYB Electives (4 courses)		**12**
CSE 301	Software Architecture and Design	
CSE 374	Algorithms I	
CSE 381	Systems 2: OS, Concurrency, Virtualization, and Security	
CSE 382	Mobile App Development	
CSE 383	Web Application Programming	
CSE 385	Database Systems	
CSE 401	Software Quality Assurance and Testing	
CSE 432	Machine Learning	
CSE 485	Advanced Database Systems	
CSE 486	Introduction to Artificial Intelligence	
ISA 412	Data Warehousing and Business Intelligence	
POL 437	Cyberlaw	
Communication		
STC 135	Principles of Public Speaking	3
Total Credit Hours		**74-75**