

CYBERSECURITY

 Frederick Community College



Program Contact:

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Cybersecurity

Those who work in the cybersecurity field evaluate the needs and weaknesses of security controls, identify the causes of system performance degradation, design and implement business-oriented security policies, procedures, and controls, and prepare and conduct security awareness trainings. They also assess risks, threats, and vulnerabilities of resources in the cyber environment, automate security related tasks by utilizing tools and scripting, and recommend directions in hardening system and networking to reduce vulnerability. They examine security policies, procedures, and controls from a holistic view, including threat modeling, vulnerability assessment, preventive planning, corrective implementation, and recovery management.

The Program

Prepares graduates for a career in the cybersecurity capacities, such as information security analyst, information technology auditor, network security engineer, and information assurance engineer. This program covers technologies, techniques, and tools required by the cybersecurity industry to identify and respond to threats and vulnerabilities in cyber systems. It covers skills needed to design, analyze, evaluate, and implement security controls in the cyber environments. This program also prepares graduates for professional certifications, including A+, Net+, Security+, Certified Ethical Hacker (CEH), Certified Information Systems Security Professional (CISSP), and Certified Information Security Auditor (CISA).

Upon successful completion of the program, students will have:

- Knowledge of disaster recovery and continuity of operations plans
- Knowledge of systems administration concepts and operations
- Knowledge of the operations and processes for diagnosing system problems
- Knowledge of the maintenance needed to keep equipment functioning properly
- Knowledge of physical computer components and architectures, and their functions
- Knowledge of network security architecture concepts, including topology, protocols, components, and principles
- Skills in conducting research for troubleshooting client-level problems

- Skills in identifying possible causes of degradation of system performance or availability and initiating actions needed to mitigate this degradation
- Skills in testing and configuring network workstations and peripherals
- Skills in using the appropriate tools for repairing software, hardware, and peripheral equipment of a system
- Skills in identifying the risks and threats to an organization's data and providing a structured way of addressing how to safeguard these critical electronic assets
- Skills in a systems approach to critical thinking

Growth Potential & Estimated Salaries

Information security analysts plan and carry out security measures to protect an organization's computer networks and systems. Their responsibilities are continually expanding as the number of cyber attacks increases. Employment of information security analysts is projected to grow 18 percent from 2014 to 2024, much faster than the average for all occupations. Demand for information security analysts is expected to be very high, as these analysts will be needed to create innovative solutions to prevent hackers from stealing critical information or causing problems for computer networks. The median annual wage for information security analysts was \$88,890 in May 2014.

(Source: Bureau of Labor Statistics, U.S. Department of Labor, Occupational Outlook Handbook, 2016-17 Edition, Information Security Analysts)



Skills/Knowledge Needed

- Analytical, diagnostic, critical thinking, and problem-solving skills.
- Eagerness to examine security relevant issues from business and technical perspectives.
- Proficiency in programming languages, such as, Java, PHP, Python, or UNIX/Linux Shell
- Ability to plan for disaster recovery and continuity of operations in event of cyber attack
- Skills in troubleshooting security-related problems and issues
- Software development concepts and software analytical skills
- Awareness of current cybersecurity-related standards, practices, procedures, and methods
- Understanding of information security concepts, principles, and architecture frameworks
- Knowledge of operating system architecture, administration, configuration, and management
- Knowledge of network architectures, routers, switches and firewalls
- Working knowledge in UNIX/Linux Operating System
- Knowledge of software development security principles, concepts, and practices
- General knowledge in operating system, network, database, web, and cloud technologies
- Working knowledge in security issues associated with social engineering, operating systems, networks, databases, web applications, and virtualization software.

Faculty

All courses are taught by fully qualified professionals. All are experts in their field who take a personal interest in teaching students to think critically and to fulfill their career goals.

Financial Assistance

FCC provides a tuition payment plan for students who wish to spread payment over several months. Scholarship and loan assistance is available for eligible students. For complete scholarship information, contact the Financial Aid office.



For more information about our graduation rates, the median debt of students who completed the program, and other important information, please visit our website at www.frederick.edu/gainfulemployment.

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For more information on Cybersecurity:

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Course	Credits
English	
EN 101 English Composition.....	3
Mathematics	
Math Elective (GenEd course list) (MA 206 recommended).....	3/4
Social & Behavioral Sciences	
Social Science Elective (GenEd course list) (HS 102–Human Relations recommended).....	3
Arts & Humanities	
(GenEd course list) (PH 208 or PH 101 recommended).....	3
Biological & Physical Sciences	
Science Elective (GenEd course list)	3/4
Interdisciplinary & Emerging Issues	
CIS 106 Object Design and Programming	3
General Education Elective (Select from GenEd course list).....	3
PE/Health Requirement	1
Departmental Requirements	
CIS 111L UNIX/Linux Operating System	3
CIS 111M PC Operating Systems.....	3
CIS 170 Security Fundamentals.....	3
CIS 179 Cybersecurity Fundamentals.....	3
CIS 180 Networking Fundamentals.....	3
CIS 203 Systems Analysis & Design.....	3
CIS 212 PC Repair & Diagnostics.....	3
CIS 217 Cybercrime & Digital Forensics Investigation.....	3
CIS 219 Ethical Hacking and Systems Defense.....	3
CIS 223 Cloud Security	3
Other Requirements	
(Select 8 credits from the following list of approved electives)	8
CIS 101 Information Systems and Technology (3)	
CIS 111B Microcomputer Software Applications: Database (3)	
CIS 116D Windows (1)	
CIS 116E Spreadsheets (1)	
CIS 116F Computer Fundamentals (1)	
CIS 140 Java Programming (3)	
CIS 190 Cisco 1 Network Fundamentals (3)	
CIS 191 Cisco 2 Routing Technologies (3)	
CIS 192 Cisco 3 Switching Technologies (3)	
CIS 193 Cisco 4 WAN Technologies (3)	
CIS 204 Computer Information Sciences Project (3)	
CIS 210 Data Communications and Networking (3)	
CIS 218 Information Security and Assurance (3)	
CIS 224 Wireless Communications (3)	
CIS 226 Game Scripting: Python (3)	
CIS 230 Database Management Systems (3)	
EN 115 Technical Writing (3)	
ID 225 Disaster, Crisis and Emergency Management (3)	
INTR 103 Internship (3)	