

# CYBERSECURITY: NETWORKING AND SECURITY OPERATIONS - DEGREE

Associate of Applied Science Degree Program | mhcc.edu/Cybersecurity  
(<http://mhcc.edu/CyberSecurity/>)

## Faculty Advisers

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Cybersecurity is the act of protecting computer networks, devices, and data from unauthorized access or criminal use. It also helps ensure the confidentiality, integrity and availability of information. It is assumed that almost all computer careers by the end of the decade will require some level of cybersecurity training.

Students in this program will learn: hardware and software repair; how to prepare and build networks; security, defense, and cryptography (the art of writing or solving codes); business continuity and disaster recovery; and "ethical hacking." Students will also be able to compete in teams against other colleges nationwide.

Students may prepare for certifications such as: CCNA, CompTIA, EC-Council, and others.

Please note: All core (CIS, ISTM) courses must be completed within 5 years of starting the program.

For success in this program, entering students are recommended to be proficient in basic computer skills. Students without computer experience or who want to brush up on computer skills before beginning this program are encouraged to enroll in BCS090 Computer Basics for College Success, a FREE course offered through the Learning Success Center.

## Program Outcomes

At the completion of this program, students should be able to:

- Perform preventative hardware and software maintenance
- Troubleshoot and correct computer hardware and software problems
- Conceptualize, design and diagram possible solutions for a given networking environment
- Work with others as part of a computer security team
- Assemble, reconfigure and upgrade personal computers
- Perform basic network and operating system administration, configuration and system security for both wired and wireless networks
- Configure and troubleshoot access to resources, hardware devices and drivers, storage use and network connections

- Analyze Internet security issues and apply them to network design problems
- Design a disaster recovery plan for a real-world scenario
- Communicate effectively and professionally in the information technology environment
- Perform necessary "white hat" attacks on a network to assess vulnerabilities
- Perform basic computer forensics on a variety of storage medium
- Design an appropriate risk analysis for a given business in a particular environment

**For the most part, courses that fulfill general education requirements can be taken in any term. Students should work with the faculty adviser(s) to create a custom academic plan based on course placement levels, career goals, and full time/part time status.**

Admitted students may also log on to Navigate (<https://mhcc.campus.eab.com/home/>) to start the process of building an academic plan based on this major and can notify an adviser for review.

### First Quarter

Fall		Credits
CIS151	Introduction to Networks	4
ISTM100A	Preparation For An Education in I.T. and Cybersecurity 1 ★	1
ISTM183C	Fundamentals of CyberSecurity	3
WR121Z	Composition I ★	4
Human Relations Requirement ( <a href="https://catalog.mhcc.edu/degree-certificate-requirements/aas/#human">https://catalog.mhcc.edu/degree-certificate-requirements/aas/#human</a> )		3-4
<b>Credits</b>		<b>15-16</b>

### Second Quarter

Winter		
CIS125SS	Spreadsheets ★	3
CIS152	Switching, Routing and Wireless Essentials	4
ISTM100B	Preparation For An Education in I.T. and Cybersecurity 2 ★	1
ISTM183A	Preparation for A+ Essentials	3
ISTM133P	Introduction to Python ★	4
ISTM283A	Fundamentals of Disaster Recovery and Business Continuity ★	3
<b>Credits</b>		<b>18</b>

### Third Quarter

Spring		
CIS153	Enterprise Networking, Security, and Automation	4
ISTM100C	Preparation For An Education in I.T. and Cybersecurity 3 ★	1
ISTM140L	Preparation for Linux ★	4
ISTM171	Introduction to Cloud and Virtualization Technologies ★	3
ISTM183B	Preparation for A+ Practical Application ★	3
Health and PE Requirement ( <a href="https://catalog.mhcc.edu/degree-certificate-requirements/aas/#health">https://catalog.mhcc.edu/degree-certificate-requirements/aas/#health</a> )		3
<b>Credits</b>		<b>18</b>

**Fourth Quarter****Fall**

CIS276	SQL	4
CIS279S	Windows Server OS	4
ISTM189	Wireless Security ★	3
ISTM283CC	Cyber Competition	3

**Credits** **14**

**Fifth Quarter****Winter**

CIS284S	Preparation for Security+ ★	4
ISTM283B	Firewall Implementation	3
ISTM283CO1	Cyber Operations 1	3
ISTM284E	Ethical Hacking	3

Select one programming elective from the following: 3-4

CIS125GA	Beginning Game Programming ★	
CIS197CSP	Web Authoring: Client-Side Programming ★ (offered only in fall)	
CS161	Computer Science I	
ISTM235MA	Mobile Apps 1: Introduction to iOS Mobile Applications Development	

**Credits** **16-17**

**Sixth Quarter****Spring**

ISTM233P	Python for Cyber Security ★	4
ISTM283F	Practical Digital Forensics	3
CIS297 or WE280CAD	Capstone Project Development or Coop Ed-Computer Applications	4
MTH065 or MTH058	Beginning Algebra II ★ or Quantitative Reasoning I	4-6

**Credits** **15-17**

**Total Credits** **96-100**

- Network and Computer Systems Administrators (<https://mhcc.lightcastcc.com/careers/network-and-computer-systems-administrator/?region=Greater%20Multnomah%20County%20Area&radius=100%20miles>)
- Information Technology Project Managers (<https://mhcc.lightcastcc.com/careers/information-technology-project-manager/?region=Greater%20Multnomah%20County%20Area&radius=100%20miles>)
- Computer Network Architects (<https://mhcc.lightcastcc.com/careers/computer-network-architect/?region=Greater%20Multnomah%20County%20Area&radius=100%20miles>)
- Database Architects (<https://mhcc.lightcastcc.com/careers/database-architect/?region=Greater%20Multnomah%20County%20Area&radius=100%20miles>)

<sup>1</sup> Students planning to transfer to a four-year university should take CIS297, while those planning to enter the workforce after graduation should take WE280CAD.

<sup>2</sup> While not required, students are highly encouraged to take courses over the summer to help reduce some of the larger term loads. Students should speak with a department advisor about which courses are offered in the summer.

Exploring **cybersecurity** as your major? Learn more with MHCC's Career Coach (<https://mhcc.lightcastcc.com/programs/cybersecurity-networking-and-security-operations-degree/209250/?region=Greater%20Multnomah%20County%20Area&radius=100%20miles>), which covers: skills needed for each career, wages, employment rates, and live job postings in the Greater Multnomah County Area.

Careers related to cybersecurity:

- Security Management Specialists (<https://mhcc.lightcastcc.com/careers/security-management-specialist/?region=Greater%20Multnomah%20County%20Area&radius=100%20miles>)
- Information Security Analysts (<https://mhcc.lightcastcc.com/careers/information-security-analyst/?region=Greater%20Multnomah%20County%20Area&radius=100%20miles>)