CYBERSECURITY: PENETRATION TESTING - AAS DEGREE

Overview

See Department website and program contacts here

The **Cybersecurity: Penetration Testing (AAS) degree** is designed for students seeking careers in cybersecurity, ethical hacking, and information security testing. The curriculum combines foundational networking and cybersecurity coursework with advanced hands-on training in penetration testing and cyber defense techniques.

Coursework includes topics such as **ethical hacking, cybersecurity operations, vulnerability assessment, risk analysis, cryptography, network security, and digital ethics**. Students develop practical technical skills used to identify vulnerabilities, conduct approved security assessments, and help organizations strengthen the security of computer systems and networks.

Students in the program learn to work with industry-standard hacker and security tools, build secure testing and "sandbox" environments, conduct technical research, and communicate findings through professional reporting and documentation.

The Penetration Testing program is workforce-focused and emphasizes practical, applied learning that prepares students for careers in cybersecurity operations, penetration testing, ethical hacking, and information security. **Coursework may also support preparation for industry certifications such as CompTIA Security+ and EC-Council Certified Ethical Hacker (CEH).**

Students are encouraged to work with an advisor (https://www.mhcc.edu/student-resources/academic-advising/) to ensure appropriate course selection and program planning based on their educational background and career goals.

Refer to the tabs above for additional information about:

- **Education Plan** – provides a sample term-by-term sequence of courses
- **Career Info** – includes information on potential occupations, employment trends, and earnings

Program Learning Objectives

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

- Apply a penetration testing framework and methodology to find and act upon vulnerabilities in a given system
- Be able to find, choose, and use the appropriate utility or series of steps for a given task or exploit in penetration testing activities
- Produce a formal written assessment at the end of penetration testing activities to be given and used by a client
- 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
- Communicate effectively and professionally in the information technology environment

Education Plan

This sample Education Plan illustrates one possible course sequence. Students should consult an advisor (https://www.mhcc.edu/student-resources/academic-advising/) to create a personalized plan.

General education courses (such as math, writing, health, etc.) can be taken during any term, or before starting the program.

First Quarter		**Credits**
ISTM100A	Preparation For An Education in I.T. and Cybersecurity 1	1
ISTM183C	Fundamentals of CyberSecurity	3
CIS151	Introduction to Networks	4
WR121Z	Composition I	4
	Credits	**12**
Second Quarter		
ISTM100B	Preparation For An Education in I.T. and Cybersecurity 2	1
ISTM183A	Preparation for A+ Essentials	3
ISTM133P	Introduction to Python	4
CIS152	Switching, Routing and Wireless Essentials	4
MTH065 or MTH058	Beginning Algebra II (or higher) or Quantitative Reasoning I	4-6
	Credits	**16-18**
Third Quarter		
ISTM100C	Preparation For An Education in I.T. and Cybersecurity 3	1
ISTM183B	Preparation for A+ Practical Application	3
ISTM140L	Preparation for Linux	4
ISTM171	Introduction to Cloud and Virtualization Technologies	3
CIS153	Enterprise Networking, Security, and Automation	4
ISTM197IIT	Internet Infrastructure and Technologies	3
	Credits	**18**
Fourth Quarter		
ISTM283CC	Cyber Competition	3
ISTM189	Wireless Security	3
CIS276	SQL	4
ISTM279A	Windows Server (Azure)	4
	Credits	**14**
Fifth Quarter		
ISTM284E	Ethical Hacking	3
ISTM233P	Python for Cyber Security	4
ISTM283B	Firewall Implementation	3

CIS284S	Preparation for Security+	4
Health and Physical Education requirement (https://catalog.mhcc.edu/degree-certificate-requirements/aas/#health)		3
	Credits	**17**
Sixth Quarter		
Select a course or combination of courses from the following list to complete a minimum of 4 credits:		4
CIS297 or WE280CAA or WE280CAB or WE280CAC or WE280CAD	Capstone Project Development [1] or Coop Ed-Computer Applications or Coop Ed-Computer Applications or Coop Ed-Computer Applications or Coop Ed-Computer Applications	
ISTM285E	Advanced Ethical Hacking	3
ISTM285W	Web Application Penetration Testing	3
ISTM283F	Practical Digital Forensics	3
Human Relations Requirement (https://catalog.mhcc.edu/degree-certificate-requirements/aas/#human)		3-4
	Credits	**16-17**
	Total Credits	**93-96**

[1] Students planning to transfer to a four-year university should take CIS297 Capstone Project Development, while those planning to enter the workforce after graduation should take WE280CAD Coop Ed-Computer Applications.

[2] 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.

Awarding Requirements

The following requirement(s) must be fulfilled to be awarded the AAS in Cybersecurity: Penetration Testing degree:

- All program core courses (CIS, ISTM) must be completed within five (5) years of starting the program.

Career Information

Explore potential careers related to this program, including typical job roles, employment trends, and projected growth. This information can help you better understand how your education may align with future career opportunities.