CYBERSECURITY: PENETRATION TESTING - DEGREE

Associate of Applied Science Degree Program

Faculty Advisers

Dr. Wayne Machuca: 503-491-7631 | Room AC2776 | Wayne.Machuca@mhcc.edu | Students with last name A-F
Katrinia McNeal: 503-491-7502 | Room AC2683 | Katrinia.McNeal@mhcc.edu | Students with last name G-L
Dr. Dustin Bessette: 503-491-7424 | Room AC2786 | Dustin.Bessette@mhcc.edu | Students with last name M-R
Jeff Sperley: 503-491-7357 | Room AC2783 | Jeff.Sperley@mhcc.edu | Students with last name S-Z

The Penetration Testing degree teaches students much of the same coursework as the Networking and Security degree, but ends with a focus on hands-on ethical hacking, how cyber attacks are conducted. Cyber and digital ethics are strictly enforced in this program.

Students will learn how to work with clients to launch an approved attack against networks in order to find vulnerabilities and conduct risk assessments. Students will also learn how to: work with hacker tools; build "sandbox" environments; conduct research; and build communication skills through the crafting of final reports. In addition, students will engage with coursework that prepares them for industry certifications such as: CompTIA's Security+ and EC-Council's Certified Ethical Hacker (CEH).

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

Program Outcomes

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

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
CIS279S or ISTM279A	Windows Server OS or Windows Server (Azure)	4
CIS276	SQL	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.