

# CYBERSECURITY, POST-DEGREE PROFESSIONAL CERTIFICATE



Students will prepare for careers dealing with networking and system administration fundamentals, with the primary focus being defensive strategies to securing networks and systems. Skills acquired will assist students in preparing to take nationally and internationally recognized industry certification exams.

**Program contact:** Learn more

**This certificate will be automatically awarded when the certificate requirements are completed. If you do not want to receive the certificate, please notify the Office of the Registrar at RegistrarOffice@tri-c.edu.**

Learn more here about how certificate credits apply to the related degree.

## Related Degrees and Certificates

- Information Technology - Cybersecurity, Associate of Applied Business

## Program Admission Requirements

- Applicant must have already completed an associate degree or higher from an accredited college or university.
- Information technology/networking background and/or experience in the field is recommended. Applicants without the recommended background may be required to take additional courses.
- 18 years of age or older.

## Program Learning Outcomes

This program is designed to prepare students to demonstrate the following learning outcomes:

- Apply principles of security to install, configure, maintain, and secure business operations.
- Take continuous, pro-active measures to intimately know and understand the complete physical and logical structure of your network so that during normal operations and monitoring, security issues can be quickly identified, isolated and resolved, including measures to prevent future occurrences.
- Apply fundamental concepts of operating systems, business applications, networking, security, backup and recovery procedures to troubleshoot, maintain, and support hardware and software to ensure efficient and effective business operations.
- Explain what a risk assessment is, what types of assessments there are and how it can impact an organization. Also explain drivers

to information security policy/standard development, security governance, compliance to external regulation and internal policies and standards.

- Identify common industry security frameworks and explain why these exist. (NIST, Cyber Security Framework, CYBER, COBIT, ISO27001, etc.)
- Apply analytical, critical and creative thinking and problem solving/troubleshooting techniques to reduce risk in business operations.
- Plan, organize, and prioritize tasks in order to meet project deadlines.
- Understand and apply legal, privacy, and ethical concepts; recognize and assess legal, privacy, and ethical issues; and demonstrate ethical, privacy, and legal behavior.

## Suggested Semester Sequence

Summer Start		Credit Hours
IT-1025	Information Technology Concepts for Programmers	3
ITNT-2300	Networking Fundamentals	3
<b>Credit Hours</b>		<b>6</b>
First Semester		
ITNT-2320	Network Administration I	3
ITNT-2370	Network Security Fundamentals	3
ITNT-2380	Linux Administration	3
EET-1303	Cisco I	3
EET-2303	Cisco II	3
<b>Credit Hours</b>		<b>15</b>
Second Semester		
EET-2313	Cisco III	3
IT-2710	Advanced Topics in Network Security	3
IT-2750	Scripting Fundamentals for Cybersecurity	3
IT-2730	Intrusion Detection/Prevention Systems Fundamentals	3
IT-2720	Ethical Hacking and Systems Defense	3
<b>Credit Hours</b>		<b>15</b>
<b>Total Credit Hours</b>		<b>36</b>

MATH-1140, MATH-1141, MATH-1200, MATH-1270, and MATH-1280 can no longer count towards fulfilling the college-level mathematics requirement. These courses were re-classified as developmental mathematics by the state of Ohio in 2016. Tri-C established a 5-year transitioning window for students who had completed these courses prior to 2016 to apply them towards meeting graduation requirements, which expired in Summer 2021. It is highly recommended to see a counselor to determine the appropriate math required for your current major.

The Competency Based Education pathway for the Cybersecurity Post Degree Certificate offers students a more flexible method for completing course work. Student take the same course but have the opportunity to complete faster and add new class within a 16 week semester. Students work with the IT Program Director to schedule classes and can register in weeks 1,3,5,7,9 and 11.

Code	Title	Credit Hours	ITNT-2320 Network Administration I 3 Credits
IT-1025	Information Technology Concepts for Programmers	3	<p>Introduction to knowledge and skills necessary to perform installation, configuration, and day-to-day administration tasks in a Microsoft Windows-based network. Includes how to install the server operating system, manage local and remote access, manage file and printer services, implement group policies, and manage server storage.</p> <p><i>Lecture: 2 hours. Laboratory: 2 hours</i></p> <p><i>Prerequisite(s): ITNT-2300 Network Fundamentals or concurrent enrollment, or departmental approval: equivalent knowledge or skills.</i></p> <p><i>OAN Approved: Transfer Assurance Guide OIT004. CTAN Approved: Career Technical Assurance Guide CTIT013.</i></p> <p><b>ITNT-2370 Network Security Fundamentals 3 Credits</b></p> <p>A survey examination of network security fundamentals involved in creating and managing secure computer network environments. Both hardware and software topics are considered, including authentication methods, remote access, network security architectures and devices, cryptography, forensics, and disaster recovery plans. Serves as preparation basis for CompTIA Security+ exam.</p> <p><i>Lecture: 2 hours. Laboratory: 2 hours</i></p> <p><i>Prerequisite(s): ITNT-2300 Networking Fundamentals.</i></p> <p><i>OAN Approved: Transfer Assurance Guide OIT005. CTAN Approved: Career Technical Assurance Guide CTIT015, CTCYBR001, and Industry-Recognized Transfer Assurance Guide ITITS015.</i></p> <p><b>ITNT-2380 Linux Administration 3 Credits</b></p> <p>Linux is used as a platform for many server applications including the dominant Web server. Cost and licensing advantages have made it a network operating system that is in widespread use. The essentials of installing, configuring, maintaining, administering, and troubleshooting the Linux Operating System will be covered.</p> <p><i>Lecture: 2 hours. Laboratory: 2 hours</i></p> <p><i>Prerequisite(s): ITNT-2300 Network Fundamentals or concurrent enrollment; or departmental approval: equivalent skills.</i></p> <p><b>EET-1303 Cisco I 3 Credits</b></p> <p>Introduction to the architectures, models, protocols, Ethernet fundamentals and networking elements that connect users, devices, applications and data through the internet and across modern computer networks. Topics include basic configurations for routers and switches to build simple local area networks (LANs) that integrate IP addressing schemes and foundational network security.</p> <p><i>Lecture: 2 hours. Laboratory: 2 hours</i></p> <p><i>Prerequisite(s): ITNT-2300 Networking Fundamentals. CTAN Approved: Career Technical Assurance Guide CTIT017 and Industry-Recognized Transfer Assurance Guide ITITN017.</i></p>
ITNT-2300	Networking Fundamentals (Prerequisite(s): IT-1025)	3	
ITNT-2320	Network Administration I (Prerequisite(s): ITNT-2300)	3	
ITNT-2370	Network Security Fundamentals (Prerequisite(s): ITNT-2300)	3	
ITNT-2380	Linux Administration (Prerequisite(s): ITNT-2300)	3	
EET-1303	Cisco I (Prerequisite(s): ITNT-2300)	3	
EET-2303	Cisco II (Prerequisite(s): EET-1303)	3	
EET-2313	Cisco III (Prerequisite(s): EET-2303)	3	
IT-2710	Advanced Topics in Network Security (Prerequisite(s): ITNT-2370)	3	
IT-2750	Scripting Fundamentals for Cybersecurity (Prerequisite(s): IT-1025)	3	
IT-2730	Intrusion Detection/Prevention Systems Fundamentals (Prerequisite(s): ITNT-2370, EET-2303)	3	
IT-2720	Ethical Hacking and Systems Defense (Prerequisite(s): ITNT-2320, ITNT-2370, ITNT-2380)	3	

#### **IT-1025 Information Technology Concepts for Programmers 3 Credits**

Introduces students to computing including networking, software engineering, databases, web programming, computer architecture, security, ethics, and career awareness through hands-on projects and inquiry.

*Lecture: 2 hours. Laboratory: 2 hours*

*Prerequisite(s): None.*

#### **ITNT-2300 Networking Fundamentals 3 Credits**

Survey course into the fundamental topics and concepts of networks and network technologies. Topics include introductory content on networking standards, models and protocols, networking hardware, transmission methods and media, LANs, WANs, Wireless, VOIP, security, and network management issues. Serves as a preparation basis for the CompTIA Network+ exam.

*Lecture: 2 hours. Laboratory: 2 hours*

*Prerequisite(s): EET-1241 Digital Fundamentals, or concurrent enrollment; or IT-1025 Information Technology Concepts for Programmers, or concurrent enrollment; or departmental approval.*

*OAN Approved: Transfer Assurance Guide OIT002. CTAN Approved: Career Technical Assurance Guide CTIT002 and Industry-Recognized Transfer Assurance Guide ITITN002.*

**EET-2303 Cisco II****3 Credits**

Covers the architecture, components, and operations of routers and switches in small networks. Introduces wireless local area networks (WLAN) and security concepts. Students learn how to configure and troubleshoot routers and switches for advanced functionality using security best practices and resolve common issues with protocols in both IPv4 and IPv6 networks.

*Lecture: 2 hours. Laboratory: 2 hours*

*Prerequisite(s): EET-1303 Cisco I, or departmental approval: equivalent experience. CTAN Approved: Career Technical Assurance Guide CTIT018 and Industry-Recognized Transfer Assurance Guide ITITN018.*

**EET-2313 Cisco III****3 Credits**

Covers the architecture, components, operations, and security to scale for large, complex networks, including wide area network (WAN) technologies. Emphasis on network security concepts and network virtualization and automation.

*Lecture: 2 hours. Laboratory: 2 hours*

*Prerequisite(s): EET-2303 Cisco II. CTAN Approved: Career Technical Assurance Guide CTIT019 and Industry-Recognized Transfer Assurance Guide ITITN019.*

**IT-2710 Advanced Topics in Network Security****3 Credits**

Capstone course. Provides in-depth understanding of network security principles and the tools and configurations needed to secure a network.

*Lecture: 2 hours. Laboratory: 2 hours*

*Prerequisite(s): ITNT-2370 Network Security Fundamentals.*

**IT-2750 Scripting Fundamentals for Cybersecurity****3 Credits**

Introduction to concepts important for popular cybersecurity scripting languages, including basic data types, control structures, regular expressions, input/output, and textual analysis. One or more common scripting languages relevant to the field of cybersecurity will be utilized in the course.

*Lecture: 2 hours. Laboratory: 2 hours*

*Prerequisite(s): IT-1025 Information Technology Concepts for Programmers*

**IT-2730 Intrusion Detection/Prevention Systems Fundamentals****3 Credits**

Covers the design, implementation, and administration of Intrusion Detection/Prevention Systems. Includes practical, hands-on experience working with these systems and analysis various attack signatures and the network traffic these systems collect.

*Lecture: 2 hours. Laboratory: 2 hours*

*Prerequisite(s): EET-2303 Cisco II and ITNT-2370 Network Security Fundamentals.*

**IT-2720 Ethical Hacking and Systems Defense****3 Credits**

Combines an ethical hacking methodology with the application of security tools to better help students secure systems. Includes an introduction to common countermeasures that effectively reduce and/or mitigate attacks.

*Lecture: 2 hours. Laboratory: 2 hours*

*Prerequisite(s): ITNT-2370 Network Security Fundamentals, and ITNT-2320 Network Administration I, and ITNT-2380 Linux Administration.*