IT Security Program: Scope & Sequence

Year 1- Semester 1
District Pre-Assessment

Information Technology Fundamentals (6 Weeks)

Certification: CompTIA ITF+ (FC0-U61)

Unit Name: (1) Using Computers (1 Week, Classroom Hours = 5, Lab Hours = 7.5)
●Describe the basics of how a computer processes data.
●Describe the functions and capabilities of types of computing devices, such as PCs, servers, mobiles, and home automation.
●Set up a computer system with regard for safety and healthy working practices.
●Navigate an OS and use input devices effectively.
●Distinguish between operating systems designed for workstations, servers, mobiles, embedded systems, and virtualization.
●Identify commercial and open source operating systems, such as Windows, macOS, iOS, Linux, Chrome, and Android.
●Use a browser to view websites.
●Use GUI and command-line management interfaces to configure an operating system.
●Explain the importance of access control features and configure user accounts.
●Describe basic support and troubleshooting procedures.
●Use websites and tools to obtain support and search for advice and help.
CTSO Integration: Air Force Association's CyberPatriot Exhibition Round 2
Professional Skills: Financial Practices 9.A
Academic Standards: ELA.11-12.W.8, ELA.11-12.SL.4
Technical Standard: FC0-U61 1.3, 1.6, 2.6, 3.1, 3.2

Unit Name: (2) Using Apps and Databases (1.25 weeks, Classroom Hours = 6, Lab Hours = 9)
●Recognize and use different notational systems, data types, and units of measure.
●Compare and contrast fundamental data types and their characteristics.
●Discuss the importance of data and ways that a company can use it to make business decisions.
●Install and uninstall software applications and configure compatibility settings.
●Explain the importance of software licensing and the types of license available.

ITS 101 - Information Technologies Fundamentals (18 weeks)

●Describe the key features of different types of application and associated file formats.
●Describe programming organizational techniques and logic.
●Categorize types of programming languages and list the advantages and disadvantages of each type.
●Describe some of the main features of application code and Object-Oriented Programming.
●Describe the ways that an application can be deployed.
●Describe databases and explain the purpose of a database.
●List the relational methods used by structured databases.
●List the ways that users and applications can interface with databases.
●Distinguish application architecture models.
CTSO Integration: (Personal Skills) Integrity, To Be or Not To Be Honest
Professional Skills: Complex Communication 1.A
Academic Standards: ELA.11-12.W.7, ELA.11-12.W.8, ELA.11-12.W.9, Work-based Learning: N/A
Technical Standard: FC0-U61 1.1, 1.2, 1.4, 1.5, 3.1, 3.3, 3.4, 3.6, 4.1, 4.2, 4.3, 5.1, 5.2, 5.3

Unit Name: (3) Using Computer Hardware (1.25 weeks, Classroom Hours = 6, Lab Hours = 9)
●Explain the way in which system components determine performance and how to specify an appropriate computer system.
●Describe the types and functions of motherboards, processors, memory, and the expansion bus.
●Explain the importance of a cooling system and the components used.
●Identify the role of PC firmware and access the firmware setup program.
●Distinguish peripheral, graphics, and networking interfaces and their uses.
●Install and configure input devices.
●Use Plug-and-Play to install devices and understand the use of the device drivers.
●Describe different display technologies and install and configure a PC display.
●Install and configure multimedia devices, such as sound cards, speakers, microphones, and webcams.
●Describe the features and capabilities of different types of printers and their associated interfaces.
●Install and configure printers and scanners.
●Contrast volatile and non-volatile storage types.
●Describe the types of system memory modules used in PCs.

●Describe the types and features of Hard Disk Drives, Solid State Drives, optical drives, and flash memory.
●Describe the properties of file systems and select an appropriate file system for a given OS and usage.
●Use a file manager to create, open, move/copy, and delete files and folders/directories.
●Use search tools and view options to locate files quickly.
CTSO Integration: Social Media Officer Training
Professional Skills: Complex Communication 1.B
Academic Standards: ELA.11-12.L.6, ELA.11-12.RI.7, ELA.11-12.RI.10,
Work-based Learning: Guest Speaker (2 hours)
Technical Standard: FC0-U61 2.1, 2.2, 2.3, 2.5, 3.1, 3.2

Unit Name: (4) Using Networks (1.25 weeks, Classroom Hours = 6, Lab Hours = 9)
●Describe the components and functions of computer networks.
●List the protocols and technologies used for addressing on computer networks.
●Connect a computer to a wired or wireless network.
●Describe the uses of common application protocols.
●Identify the roles of different network devices in providing local and Internet network connectivity.
●Distinguish the advantages and disadvantages of Internet connection types.
●Connect a computer to a wired or wireless network.
●Configure a wireless access point to use secure network settings.
●Explain risks of using open Internet access methods.
●Describe safe browsing practices and configure browser security/privacy features.
●Identify the use and basic configuration parameters of a firewall.
●List ways to share files and storage on a local network.
●Describe means of sharing files and services on the Internet.
●Explain the importance of backups and configure simple backup options.
●Identify the key features of different types of mobile devices and mobile operating systems.
●Configure network, email, and data transfer settings on mobile devices.
CTSO Integration: (Personal Skills) Integrity, To Be or Not To Be Honest
Professional Skills: Complex Communication 4.F
Academic Standards: ELA.11-12.W.9, ELA.11-12.SL.5
Technical Standard: FC0-U61 2.4, 2.5, 2.7, 2.8, 3.5, 6.2, 6.7

Unit Name: (5) Security Concepts (1.25 weeks, Classroom Hours = 7, Lab Hours = 10.5)
●Distinguish threats to the confidentiality, integrity, and availability of information processing systems.
●Identify social engineering techniques.
●Describe the importance of business continuity and how to make systems fault tolerant.
●Explain the importance of disaster recovery plans.
●Describe basic principles for hardening computer systems against attack.
●Distinguish types of malware and use anti-malware software.
●Identify spam and phishing threats.
●Install software patches and updates from secure sources.
●Distinguish between identification, authentication, authorization, and accounting in access control systems.
●Identify different authentication factors and understand their use in providing strong authentication.
●List best practices when choosing passwords.
●Explain how encryption technologies are used for authentication and access control.
●Explain the importance of written policies and procedures in ensuring behavioral security.
●Describe basic principles for handling confidential information.
●List some privacy and usage issues for corporate systems and Internet/social media sites.
CTSO Integration: (Personal Skills) Integrity, To Be or Not To Be Honest
Professional Skills: Complex Communication 1.C
Academic Standards: ELA.11-12.L.4
Technical Standard: FC0-U61 6.1, 6.2, 6.3, 6.4, 6.5, 6.6, 6.7

TestOut PC Pro v7 (12 Weeks)
    Certification: CompTIA A+ (220-1101, 220-1102)

Unit Name: (1) Course Introduction (.5 weeks, Classroom Hours = 2, Lab Hours = 3)
●Given a scenario, install and configure laptop hardware and components.
●Compare and contrast common networking hardware.
●Given a scenario, select and install storage devices.
●Summarize environmental impacts and local environmental controls.
CTSO Integration: Air Force Association's CyberPatriot Practice Round
Professional Skills: Legal and Ethical practices 8.C
Academic Standards: Math 5.NF.B.6
Technical Standard: 220-1101 3.0

Unit Name: (2) PC Technician Responsibilities (1 week, Classroom Hours = 5, Lab Hours = 7.5)
●Given a scenario, install and configure laptop hardware and components.
●Given a scenario, install and configure motherboards, central processing units (CPUs), and add-on cards.
●Given a scenario, install and replace printer consumables.
●Given a scenario, troubleshoot video, projector, and display issues.
●Given a scenario, troubleshoot problems with wired and wireless networks.
●Given a scenario, use networking tools.
●Given a scenario, troubleshoot problems related to motherboards, RAM, CPU, and power.
●Given a scenario, apply the best practice methodology to resolve problems.
●Given a scenario, use common safety procedures.
●Summarize environmental impacts and local environmental controls.
●Given a scenario, use proper communication techniques and professionalism.
●Explain basic change-management best practices.
●Given a scenario, implement best practices associated with documentation and support systems information management.
CTSO Integration: Air Force Association's CyberPatriot Practice Round
Professional Skills: Collaboration: 2.A
Academic Standards: Math A-CED.A.1
Technical Standard: ADE Network Security 15.1200.30.2(2.1-2.7), 220-1101 3.0, 5.0

Unit Name: (3) Hardware (1.5 weeks, Classroom Hours = 7, Lab Hours = 10.5)
●Explain basic cable types and their connectors, features, and purposes.
●Given a scenario, deploy and configure multifunction devices/printers and settings.
●Given a scenario, install and configure motherboards, central processing units (CPUs), and add-on cards.
●Given a scenario, troubleshoot problems related to motherboards, RAM, CPU, and power.
●Given a scenario, install the appropriate RAM.
●Given a scenario, install or replace the appropriate power supply.
●Given a scenario, implement best practices associated with documentation and support systems information management.
●Given a scenario, apply application installation and configuration concepts.

●Given a scenario, use the appropriate Microsoft Windows 10 Control Panel utility.
●Given a scenario, use common safety procedures.
●Given a scenario, troubleshoot common personal computer (PC) security issues.
CTSO Integration: Air Force Association's CyberPatriot Practice Round
Professional Skills: Professionalism 4.B
Academic Standards: ELA.11-12.RI.2
Technical Standard: 220-1101 3.0, 5.0

Unit Name: (4) Operating System Basics (.5 weeks, Classroom Hours = 4, Lab Hours = 6)
●Given a scenario, install and configure motherboards, central processing units (CPUs), and add-on cards.
●Explain common OS types and their purposes.
●Identify basic features of Microsoft Windows editions.
●Given a scenario, perform OS installation and upgrades in a diverse OS environment.
●Given a scenario, troubleshoot common Windows OS problems.
●Identify common features and tools of the Linux client/desktop OS.
●Identify common features and tools of the macOS/desktop OS.
CTSO Integration: Air Force Association's CyberPatriot Practice Round
Professional Skills: Professionalism 4.F
Academic Standards: ELA.11-12.SL.3, ELA.11-12.RI.10, ELA.11-12.W.4
Work-based Learning: Guest Speaker (2 hours)
Technical Standard: ADE Network Security 15.1200.30.2(2.1-2.7), 220-1101 5.0

Unit Name: (5) Storage (1 weeks Classroom Hours = 5, Lab Hours = 7.5)
●Given a scenario, select and install storage devices.
●Explain basic cable types and their connectors, features, and purposes.
●Given a scenario, install and configure motherboards, central processing units (CPUs), and add-on cards.
●Given a scenario, troubleshoot and diagnose problems with storage drives and RAID arrays.
●Given a scenario, install and configure laptop hardware and components.
●Given a scenario, use the appropriate Microsoft command-line tool.
●Given a scenario, use features and tools of the Microsoft Windows 10 operating system (OS).
●Explain common OS types and their purposes.

●Given a scenario, perform OS installations and upgrades in a diverse OS environment.
●Given a scenario, implement best practices associated with documentation and support systems information management.
●Identify common features and tools of Linux client/desktop OS.
●Given a scenario, troubleshoot common Windows OS problems.
CTSO Integration: Air Force Association's CyberPatriot Practice Round
Professional Skills: Collaboration 2.C
Academic Standards: ELA.11-12.RI.7
Technical Standard: ADE Network Security 15.1200. SECURITY30.1(1.1-1.4), 220-1101 2.0, 5.0

Unit Name: (6) System Implementation (.5 week, Classroom Hours = 2, Lab Hours = 3)
●Given a scenario, select and install storage devices.
●Summarize cloud-computing concepts.
●Summarize aspects of client-side virtualization.
●Given a scenario, perform OS installations and upgrades in a diverse OS environment.
●Given a scenario, implement best practices associated with documentation and support systems information management.
CTSO Integration: (Personal Skills) Work Ethic, Get It Done
Professional Skills: Legal and Ethical practices 8.D
Academic Standards: Complex Communication 2.C
Technical Standard: ADE Network Security 15.1200.30.1(1.1-1.4), 15.1200.30.3, 220-1101 2.0, 5.0

Unit Name: (7) System Management I (1 week, Classroom Hours = 5, Lab Hours = 7.5)
●Given a scenario, install the appropriate RAM.
●Given a scenario, use the appropriate Microsoft command-line tool.
●Given a scenario, use features and tools of the Microsoft Windows 10 operating system (OS).
●Given a scenario, use the appropriate Microsoft Windows 10 Control Panel utility.
●Given a scenario, use remote access technologies.
●Given a scenario, use the appropriate Windows settings.
●Given a scenario, apply application installation and configuration concepts.
●Identify common features and tools of the macOS/desktop OS.
●Identify common features and tools of the Linux client/desktop OS.

●Explain the importance of prohibited content/activity and privacy, licensing, and policy concepts.
●Given a scenario, troubleshoot common Windows OS problems.
●Identify the basics of scripting.
CTSO Integration: Air Force Association's CyberPatriot Round 1
Professional Skills: Professionalism 4.C
Academic Standards: ELA.11-12.RI.2
Work-based Learning: Service Learning Project with Community Partners (3 Hours)
Technical Standard: 220-1101 1.0

Unit Name: (8) System Management II (1 week, Classroom Hours = 5, Lab Hours = 7.5)
●Identify basic features of Microsoft Windows editions.
●Given a scenario, use the appropriate Microsoft command-line tool.
●Given a scenario, use features and tools of the Microsoft Windows 10 operating system (OS).
●Summarize various security measures and their purposes.
●Given a scenario, use the appropriate Windows settings.
●Given a scenario, manage and configure basic security settings in the Microsoft Windows OS.
●Given a scenario, use remote access technologies.
●Given a scenario, troubleshoot common personal computer (PC) security issues.
●Given a scenario, perform OS installations and upgrades in a diverse OS environment.
●Identify common features and tools of the macOS/desktop OS.
●Identify common features and tools of the Linux client/desktop OS.
●Given a scenario, implement workstation backup and recovery methods.
●Given a scenario, detect, remove, and prevent malware using the appropriate tools and methods.
●Given a scenario, troubleshoot common Windows OS problems.
●Given a scenario, use the appropriate Microsoft command-line tool.
CTSO Integration: (Personal Skills) Work Ethic, Get It Done
Professional Skills: Professionalism 4.D
Academic Standards: ELA.11-12.RI.2
Technical Standard: 220-1101 2.0, 3.0

Unit Name: (9) File Management (.5 weeks, Classroom Hours = 2, Lab Hours = 3)
●Given a scenario, install and configure motherboards, central processing units (CPUs), and add-on cards.

●Given a scenario, use the appropriate Microsoft command-line tool.
●Given a scenario, use the appropriate Microsoft Windows 10 Control Panel Utility.
●Explain common OS types and their purposes.
●Given a scenario, manage and configure basic security settings in the Microsoft Windows OS.
●Compare and contrast wireless security protocols and authentication methods.
●Given a scenario, configure a workstation to meet best practices for security.
●Identify common features and tools of the Linux client/desktop OS.
CTSO Integration: (Personal Skills) Professionalism, Stop, Think and Be Mature
Professional Skills: Legal and Ethical practices 8.G
Academic Standards: ELA.11-12.RI.2
Technical Standard: 220-1101 4.0

Unit Name: (10) Peripheral Devices (.5 weeks, Classroom Hours = 2, Lab Hours = 3)
●Given a scenario, install and configure laptop hardware and components.
●Compare and contrast the display components of mobile devices.
●Given a scenario, troubleshoot video, projector, and display issues.
●Given a scenario, select and install storage devices.
●Given a scenario, install and configure motherboards, central processing units (CPUs), and add-on cards.
●Given a scenario, troubleshoot and diagnose problems with storage drives and RAID arrays.
●Given a scenario, use the appropriate Windows settings.
●Identify common features and tools of the macOS/desktop OS.
●Given a scenario, use features and tools of the Microsoft Windows 10 operating system (OS).
●Given a scenario, use the appropriate Microsoft Windows 10 Control Panel utility.
●Given a scenario, perform OS installations and upgrades in a diverse OS environment.
●Identify common features and tools of the Linux client/desktop OS.
●Given a scenario, troubleshoot common Windows OS problems.
CTSO Integration: (Personal Skills) Professionalism, Stop, Think and Be Mature
Professional Skills: Collaboration 2.C
Academic Standards: ELA.11-12.RI.2
Technical Standard: 220-1102 1.0, 3.0

Unit Name: (11) Networking (.5 week, Classroom Hours = 3, Lab Hours = 4.5)
●Compare and contrast Transmission Control Protocol (TCP) and User Datagram Protocol (UDP) ports, protocols, and their purposes.
●Compare and contrast common networking hardware.
●Given a scenario, install and configure basic wired/wireless small office/home office (SOHO) networks.
●Compare and contrast Internet connection types, network types, and their features.
●Compare and contrast common network configuration concepts.
●Summarize services provided by networked hosts.
●Given a scenario, configure basic mobile-device network connectivity and application support.
●Compare and contrast protocols for wireless networking.
●Given a scenario, troubleshoot problems with wired and wireless networks.
●Given a scenario, configure Microsoft Windows networking features on a client/desktop.
●Compare and contrast wireless security protocols and authentication methods.
●Given a scenario, configure appropriate security settings on small office/home office (SOHO) wireless and wired networks.
●Given a scenario, use the appropriate Microsoft command-line tool.
●Identify common features and tools of the Linux client/desktop OS.
●Given a scenario, implement best practices associated with documentation and support systems information management.
CTSO Integration: Air Force Association's CyberPatriot Round 2
Professional Skills: Initiative and Self-Direction 5.A
Academic Standards: ELA.11-12.RI.2
Technical Standard: 220-1102 1.0, 3.0

Unit Name: (12) Mobile Devices (.5 week, Classroom Hours = 3, Lab Hours = 4.5)
●Given a scenario, install and configure laptop hardware and components.
●Compare and contrast the display components of mobile devices.
●Given a scenario, set up and configure accessories and ports of mobile devices.
●Given a scenario, configure basic mobile-device network connectivity and application support.
●Compare and contrast common network configuration concepts.

●Explain basic cable types and their connectors, features, and purposes.
●Given a scenario, troubleshoot problems related to motherboards, RAM, CPU, and power.
●Given a scenario, troubleshoot common issues with mobile devices.
●Given a scenario, troubleshoot problems with wired and wireless networks.
●Given a scenario, use the appropriate Microsoft Windows 10 Control Panel utility.
●Given a scenario, troubleshoot common mobile OS and application issues.
●Explain common OS types and their purposes.
●Given a scenario, configure Microsoft Windows networking features on a client/desktop.
●Compare and contrast wireless security protocols and authentication methods.
●Explain common methods for securing mobile and embedded devices.
●Identify common features and tools of the macOS/desktop OS.
●Given a scenario, manage and configure basic security settings in the Microsoft Windows OS.
CTSO Integration: (Personal Skills) Professionalism, Stop, Think and Be Mature
Professional Skills: Professionalism 4.A
Academic Standards: ELA.11-12.RI.2
Technical Standard: 220-1102 1.0, 3.0

Unit Name: (13) Printing (.5 week, Classroom Hours = 2, Lab Hours = 3)
●Given a scenario, deploy and configure multifunction devices/printers and settings.
●Given a scenario, troubleshoot and resolve printer issues.
●Given a scenario, configure basic mobile-device network connectivity and application support.
●Summarize cloud-computing concepts.
●Given a scenario, troubleshoot problems with wired and wireless networks.
●Given a scenario, install and replace printer consumables.
●Summarize environmental impacts and local environmental controls.
CTSO Integration: (Personal Skills) Professionalism, I Believe In Me
Professional Skills: Initiative and Self-Direction 5.B
Academic Standards: ELA.11-12.RI.2
Technical Standard: 220-1102 2.0

Unit Name: (14) Security (1 week, Classroom Hours = 5, Lab Hours = 7)

●Compare and contrast common networking hardware.
●Summarize services provided by networked hosts.
●Summarize various security measures and their purposes.
●Given a scenario, manage and configure basic security settings in the Microsoft Windows OS.
●Given a scenario, configure a workstation to meet best practices for security.
●Explain the importance of prohibited content/activity and privacy, licensing, and policy concepts.
●Explain common social-engineering attacks, threats, and vulnerabilities.
●Given a scenario, use common data destruction and disposal methods.
●Given a scenario, detect, remove, and prevent malware using the appropriate tools and methods.
●Given a scenario, use best practice procedures for malware removal.
●Given a scenario, use the appropriate Microsoft Windows 10 Control Panel utility.
●Given a scenario, configure Microsoft Windows networking features on a client/desktop.
●Given a scenario, install and configure browsers and relevant security settings.
●Given a scenario, troubleshoot common personal computer (PC) security issues.
CTSO Integration: (Personal Skills) Professionalism, I Believe In Me
Professional Skills: Initiative and Self-Direction 5.D, Legal and Ethical Practices 8.E
Academic Standards: ELA.11-12.W.4, ELA.11-12.W.5
Technical Standard: 220-1102 4.0

Unit Name: (15) Capstone Project (1 week, Classroom Hours = 0, Lab Hours = 12.5)

Semester 1 Capstone Project: Build a Computer

Year 1- Semester 2
ITS 102 - Operating Systems
(16 weeks)

Red Hat System Administration I RH124 (5 Weeks)
Certification: Red Hat Certified Systems Administrator (RHCSA) (EX200)

Unit Name: (1) Getting Started with Red Hat Enterprise Linux
(1 Day, Classroom Hours = 1, Lab Hours = 1.5)
●Define and explain the purpose of Linux, open source, Linux distributions, and Red Hat Enterprise Linux.

CTSO Integration: (Personal Skills) Professionalism, I Believe In Me
Professional Skills: Initiative and Self-Direction 5.C
Academic Standards: ELA.11-12.RI.2
Technical Standard: RHCSA EX200

Unit Name: (2) Accessing the Command Line (1 Day, Classroom Hours = 1, Lab Hours = 1.5)
●Log in to a Linux system on a local text console and run simple commands using the shell.
●Log in to a Linux system using the GNOME 3 desktop environment and run commands from a shell prompt in a terminal program.
●Save time by using tab completion, command history, and command editing shortcuts to run commands in the Bash shell.
CTSO Integration: (Personal Skills) Professionalism, I Believe In Me
Professional Skills: Thinking and Innovation 3.C
Academic Standards: ELA.11-12.RI.2
Technical Standard: RHCSA EX200

Unit Name: (3) Managing Files From the Command Line (1 Day, Classroom Hours = 1, Lab Hours = 1.5)
●Describe how Linux organizes files, and the purposes of various directories in the file-system hierarchy.
●Specify the location of files relative to the current working directory and by absolute location, determine and change your working directory, and list the contents of directories.
●Create, copy, move, and remove files and directories.
●Make multiple file names reference the same file using hard links and symbolic (or "soft") links.
●Efficiently run commands affecting many files by using pattern matching features of the Bash shell.
CTSO Integration: (Personal Skills) Professionalism, I Believe In Me
Professional Skills: Thinking and Innovation 3.B
Academic Standards: ELA.11-12.RI.2
Technical Standard: RHCSA EX200

Unit Name: (4) Getting Help in Red Hat Enterprise Linux (1 Day, Classroom Hours = 1, Lab Hours = 1.5)
●Find information in local Linux system manual pages.
●Find information from local documentation in GNU Info.
CTSO Integration: (Personal Skills) Professionalism, I Believe In Me
Professional Skills: Thinking and Innovation 3.A
Academic Standards: ELA.11-12.RI.2
Technical Standard: RHCSA EX200

Unit Name: (5) Creating, Viewing, and Editing Text Files (1 Day, Classroom Hours = 1, Lab Hours = 1.5)
●Save command output or errors to a file with shell redirection, and process command output through multiple command-line programs with pipes.

●Create and edit text files using the vim editor.
●Use shell variables to help run commands, and edit Bash startup scripts to set shell and environment variables to modify the behavior of the shell and programs run from the shell.
CTSO Integration: (Personal Skills) Responsibility, You Can Count On Me
Professional Skills: Thinking and Innovation 3.E
Academic Standards: ELA.11-12.RI.2
Technical Standard: RHCSA EX200

Unit Name: (6) Managing Local Users and Groups (2 Day, Classroom Hours = 2, Lab Hours = 3)
●Describe the purpose of users and groups on a Linux system.
●Switch to the superuser account to manage a Linux system, and grant other users superuser access using the **sudo** command.
●Create, modify, and delete locally defined user accounts.
●Create, modify, and delete locally defined group accounts.
●Set a password management policy for users, and manually lock and unlock user accounts.
CTSO Integration: (Personal Skills) Responsibility, You Can Count On Me
Professional Skills: Legal and Ethical practices 8.A
Academic Standards: ELA.11-12.RI.2
Technical Standard: RHCSA EX200

Unit Name: (7) Controlling Access to Files (2 Day, Classroom Hours = 2, Lab Hours = 3)
●List the file system permissions on files and directories, and interpret the effect of those permissions on access by users and groups.
●Change the permissions and ownership of files using command-line tools.
●Control the default permissions of new files created by users, explain the effect of special permissions, and use special permissions and default permissions to set the group owner of files created in a particular directory.
CTSO Integration: (Personal Skills) Responsibility, You Can Count On Me
Professional Skills: Thinking and Innovation 3.E
Academic Standards: ELA.11-12.RI.2
Work-based Learning: Field Trip
Technical Standard: RHCSA EX200

Unit Name: (8) Monitoring and Managing Linux Processes (2 Day, Classroom Hours = 2, Lab Hours = 3)
●Get information about programs running on the system so that you can determine status, resource use, and ownership, so you can control them.
●Use Bash job control to manage multiple processes started from the same terminal session.
●Control and terminate processes that are not associated with your shell, and forcibly end user sessions and processes.
●Describe what load average is and determine processes responsible for high resource use on a server.

Professional Skills: Collaboration 2.C
Academic Standards: ELA.11-12.RI.2
Technical Standard: RHCSA EX200

Unit Name: (9) <u>Controlling Services and Daemons</u> (2 Day, Classroom Hours = 2, Lab Hours = 3)
●List system daemons and network services started by the systemd service and socket units.
●Control system daemons and network services, using **systemctl**.
CTSO Integration: (Personal Skills) Responsibility, Personal Well-Being, My #1 Responsibility
Professional Skills: Collaboration 2.C
Academic Standards: ELA.11-12.RI.2
Technical Standard: RHCSA EX200

Unit Name: (10) <u>Configuring and Securing SSH</u> (1 Day, Classroom Hours = 1, Lab Hours = 1.5)
●Log in to a remote system and run commands using **ssh**.
●Configure key-based authentication for a user account to log in to remote systems securely without a password.
●Restrict direct logins as root and disable password-based authentication for the OpenSSH service.
CTSO Integration: (Personal Skills) Responsibility, Personal Well-Being, My #1 Responsibility
Professional Skills: Collaboration 2.C
Academic Standards: ELA.11-12.RI.2
Technical Standard: RHCSA EX200

Unit Name: (11) <u>Managing Networking</u> (1 Day, Classroom Hours = 1, Lab Hours = 1.5)
●Describe fundamental concepts of network addressing and routing for a server.
●Test and inspect current network configuration with command-line utilities.
●Manage network settings and devices using **nmcli**.
●Modify network settings by editing configuration files.
●Configure a server's static host name and its name resolution, and test the results.
CTSO Integration: (Personal Skills) Adaptability/Flexibility, Get Out-Of-The-Box
Professional Skills: Initiative and Self-Direction 5.D
Academic Standards: Thinking and Innovation 3.E
Technical Standard: RHCSA EX200

Unit Name: (12) <u>Installing and Updating Software Packages</u> (1 Day, Classroom Hours = 1, Lab Hours = 1.5)
●Register a system to your Red Hat account and assign it entitlements for software updates and support services using Red Hat Subscription Management.
●Explain how software is provided as RPM packages, and investigate the packages installed on the system with Yum and RPM.
●Find, install, and update software packages using the yum command.

●Enable and disable use of Red Hat or third-party Yum repositories by a server.
●Explain how modules allow installation of specific versions of software, list, enable, and switch module streams, and install and update packages from a module.
CTSO Integration: (Personal Skills) Adaptability/Flexibility, Get Out-Of-The-Box
Professional Skills: Legal and Ethical practices 8.B
Academic Standards: ELA.11-12.RI.2
Work-based Learning: Mock Business/Industry Project - NICE Challenge (24 hours)
Technical Standard: RHCSA EX200

Unit Name: (13) <u>Accessing Linux File Systems</u> (1 Day, Classroom Hours = 1, Lab Hours = 1.5)
●Explain what a block device is, interpret the file names of storage devices, and identify the storage device used by the file system for a particular directory or file.
●Access file systems by attaching them to a directory in the file system hierarchy.
●Search for files on mounted file systems using the **find** and **locate** commands.
CTSO Integration: (Personal Skills) Adaptability/Flexibility, Get Out-Of-The-Box
Professional Skills: Legal and Ethical practices 8.B
Academic Standards: ELA.11-12.RI.2
Work-based Learning: Mock Business/Industry Project - NICE Challenge (24 hours)
Technical Standard: RHCSA EX200

Unit Name: (14) <u>Analyzing Servers and Getting Support</u> (1 Day, Classroom Hours = 1, Lab Hours = 1.5)
●Activate the Web Console management interface to remotely manage and monitor the performance of a Red Hat Enterprise Linux server.
●Describe key resources available through the Red Hat Customer Portal, and find information from Red Hat documentation and the Knowledgebase.
●Analyze servers for issues, remediate or resolve them, and confirm the solution with Red Hat Insights.
CTSO Integration: (Personal Skills) Adaptability/Flexibility, Get Out-Of-The-Box
Professional Skills: Legal and Ethical practices 8.B
Academic Standards: ELA.11-12.RI.2
Work-based Learning: Mock Business/Industry Project - NICE Challenge (24 hours)
Technical Standard: RHCSA EX200

Unit Name: (15) <u>Comprehensive Review/Final</u> (1 Day, Classroom Hours = 2, Lab Hours = 3)
●Review tasks from Red Hat System Administration I
CTSO Integration: (Personal Skills) Professionalism, I Believe In Me
Professional Skills: Thinking and Innovation 3.B

Academic Standards: ELA.11-12.W.7, ELA.11-12.W.8, ELA.11-12.W.9, ELA.11-12.W.8, ELA.11-12.SL.4
Technical Standard: RHCSA EX200

Red Hat System Administration II RH134 (4 Weeks)
Certification: Red Hat Certified Systems Administrator (RHCSA) (EX200)

Unit Name: (1) Improving Command-line Productivity (4 Days, Classroom Hours = 4, Lab Hours = 6)
●Automate sequences of commands by writing a simple shell script.
●Efficiently run commands over lists of items in a script or from the command-line using for loops and conditionals.
●Find text matching a pattern in log files and command output using the **grep** command and regular expressions.
CTSO Integration: (Personal Skills) Professionalism, I Believe In Me
Professional Skills: Intergenerational and Cross-Cultural Competence 6.A
Academic Standards: ELA.11-12.W.7, ELA.11-12.W.8, ELA.11-12.W.9, ELA.11-12.W.8, ELA.11-12.SL.4
Technical Standard: RHCSA EX200

Unit Name: (2) Scheduling Future Tasks (2 Days, Classroom Hours = 2, Lab Hours = 3)
●Set up a command that runs once at some point in the future.
●Schedule commands to run on a repeating schedule using a user's crontab file.
●Schedule commands to run on a repeating schedule using the system crontab file and directories.
●Enable and disable systemd timers, and configure a timer that manages temporary files
CTSO Integration: (Personal Skills) Professionalism, I Believe In Me
Professional Skills: Intergenerational and Cross-Cultural Competence 6.B
Academic Standards: ELA.11-12.W.7, ELA.11-12.W.8, ELA.11-12.W.9, ELA.11-12.W.8, ELA.11-12.SL.4
Technical Standard: RHCSA EX200

Unit Name: (3) Analyzing and Storing Logs (2 Days, Classroom Hours = 2, Lab Hours = 3)
●Describe the basic logging architecture used by Red Hat Enterprise Linux to record events.
●Interpret events in relevant syslog files to troubleshoot problems or review system status.
●Find and interpret entries in the system journal to troubleshoot problems or review system status.
●Configure the system journal to preserve the record of events when a server is rebooted.
●Maintain accurate time synchronization using NTP and configure the time zone to ensure correct time stamps for events recorded by the system journal and logs.
CTSO Integration: (Personal Skills) Responsibility, Personal Well-Being, My #1 Responsibility
Professional Skills: Thinking and Innovation 3.E
Academic Standards: ELA.11-12.RI.2
Work-based Learning: Guest Speaker (2 hours)
Technical Standard: RHCSA EX200

Unit Name: (4) Archiving and Transferring Files (1 Day, Classroom Hours = 1, Lab Hours = 1.5)
●Archive files and directories into a compressed file using tar, and extract the contents of an existing tar archive.
●Transfer files to or from a remote system securely using SSH.
●Synchronize the contents of a local file or directory with a copy on a remote server.
CTSO Integration: (Personal Skills) Adaptability/Flexibility, Get Out-Of-The-Box
Professional Skills: Legal and Ethical practices 8.B
Academic Standards: ELA.11-12.RI.2
Work-based Learning: Mock Business/Industry Project - NICE Challenge (24 hours)
Technical Standard: RHCSA EX200

Unit Name: (5) Tuning System Performance (2 Days, Classroom Hours = 2, Lab Hours = 3)
●Optimize system performance by selecting a tuning profile managed by the tuned daemon.
●Prioritize or de-prioritize specific processes with the nice and renice commands.
CTSO Integration: (Personal Skills) Professionalism, I Believe In Me
Professional Skills: Intergenerational and Cross-Cultural Competence 6.B
Academic Standards: ELA.11-12.W.7, ELA.11-12.W.8, ELA.11-12.W.9, ELA.11-12.W.8, ELA.11-12.SL.4
Technical Standard: RHCSA EX200

Unit Name: (6) Managing Selinux Security (1 Day, Classroom Hours = 2, Lab Hours = 3)
●Describe how SELinux protects resources and how to select the enforcement mode.
●Configure a file's SELinux context to control how processes interact with that file.
●Configure SELinux booleans to allow runtime policy changes for varying access needs.
●Investigate SELinux log messages and troubleshoot SELinux AVC denials.
CTSO Integration: (Personal Skills) Professionalism, I Believe In Me
Professional Skills: Organizational Culture 7.B
Academic Standards: ELA.11-12.W.7, ELA.11-12.W.8, ELA.11-12.W.9, ELA.11-12.W.8, ELA.11-12.SL.4
Technical Standard: RHCSA EX200

Unit Name: (7) Managing Basic Storage (2 Days, Classroom Hours = 2, Lab Hours = 3)

●Create storage partitions, format them with file systems, and mount them for use.
●Create and manage swap spaces to supplement physical memory.
CTSO Integration: (Personal Skills) Professionalism, I Believe In Me
Professional Skills: Organizational Culture 7.C
Academic Standards: ELA.11-12.W.7, ELA.11-12.W.8, ELA.11-12.W.9, ELA.11-12.W.8, ELA.11-12.SL.4
Technical Standard: RHCSA EX200

Unit Name: (8) Manage Storage Stack (2 Days, Classroom Hours = 2, Lab Hours = 3)
●Manage multiple storage layers using Stratis local storage management.
●Optimize the use of storage space by using VDO to compress and deduplicate data on storage devices.
CTSO Integration: (Personal Skills) Professionalism, I Believe In Me
Professional Skills: Legal and Ethical Practices 8.A
Academic Standards: ELA.11-12.W.7, ELA.11-12.W.8, ELA.11-12.W.9, ELA.11-12.W.8, ELA.11-12.SL.4
Technical Standard: RHCSA EX200

Unit Name: (9) Accessing Network-Attached Storage (2 Days, Classroom Hours = 2, Lab Hours = 3)
●Mount, use, and unmount an NFS export from the command line and at boot time.
●Configure the automounter with direct and indirect maps to automatically mount an NFS file system on demand, and unmount it when it is no longer in use.
●Configure an NFS client to use NFSv4 using the new **nfsconf** tool.
CTSO Integration: (Personal Skills) Professionalism, I Believe In Me
Professional Skills: Legal and Ethical Practices 8.B
Academic Standards: ELA.11-12.W.7, ELA.11-12.W.8, ELA.11-12.W.9, ELA.11-12.W.8, ELA.11-12.SL.4
Technical Standard: RHCSA EX200

Unit Name: (10) Controlling The Boot Process (2 Days, Classroom Hours = 2, Lab Hours = 3)
●Describe the Red Hat Enterprise Linux boot process, set the default target used when booting, and boot a system to a non-default target.
●Log in to a system and change the root password when the current root password has been lost.
●Manually repair file system configuration or corruption issues that stop the boot process.
CTSO Integration: (Personal Skills) Professionalism, I Believe In Me
Professional Skills: Legal and Ethical Practices 8.C
Academic Standards: ELA.11-12.W.7, ELA.11-12.W.8, ELA.11-12.W.9, ELA.11-12.W.8, ELA.11-12.SL.4
Technical Standard: RHCSA EX200

Unit Name: (11) Managing Network Security (2 Days, Classroom Hours = 2, Lab Hours = 3)
●Accept or reject network connections to system services using firewalld rules.
●Control whether network services can use specific networking ports by managing SELinux port labels.
CTSO Integration: (Personal Skills) Professionalism, I Believe In Me
Professional Skills: Legal and Ethical Practices 8.D
Academic Standards: ELA.11-12.W.7, ELA.11-12.W.8, ELA.11-12.W.9, ELA.11-12.W.8, ELA.11-12.SL.4
Technical Standard: RHCSA EX200

Unit Name: (12) Installing Red Hat Enterprise Linux((1 Day, Classroom Hours = 1, Lab Hours = 1.5)
●Install Red Hat Enterprise Linux on a server.
●Automate the installation process using Kickstart.
●Install a virtual machine on your Red Hat Enterprise Linux server using Cockpit.
CTSO Integration: (Personal Skills) Professionalism, I Believe In Me
Professional Skills: Financial Practices 9.A
Academic Standards: ELA.11-12.W.7, ELA.11-12.W.8, ELA.11-12.W.9, ELA.11-12.W.8, ELA.11-12.SL.4
Technical Standard: RHCSA EX200

Unit Name: (13) Run Containers (1 Day, Classroom Hours = 1, Lab Hours = 1.5)
●Container Concepts
●Deploy Containers
●Manage Containers: Storage and Network
●Manage Containers: System Services
●Run Containers
CTSO Integration: (Personal Skills) Professionalism, I Believe In Me
Professional Skills: Financial Practices 9.B
Academic Standards: ELA.11-12.W.7, ELA.11-12.W.8, ELA.11-12.W.9, ELA.11-12.W.8, ELA.11-12.SL.4
Technical Standard: RHCSA EX200

Unit Name: (14) Comprehensive Review (1 Day, Classroom Hours = 1, Lab Hours = 1.5)
●Review tasks from Red Hat System Administration II
CTSO Integration: (Personal Skills) Professionalism, I Believe In Me
Professional Skills: Financial Practices 9.B
Academic Standards: ELA.11-12.W.7, ELA.11-12.W.8, ELA.11-12.W.9, ELA.11-12.W.8, ELA.11-12.SL.4
Technical Standard: RHCSA EX200

ITS 102 - Operating Systems

Introduction to Networks v7 (9 Weeks)
      Cisco Certified Network Associate (CCNA) (200-301)

Unit Name (1): Networking Today (1 Day, Classroom Hours = 1, Lab Hours = 1.5)
●Explain the advances in modern network technologies.
CTSO Integration: A

Professional Skills: Initiative and Self-Direction 5.E
Academic Standards: Complex Communication 1.C
Technical Standard: ADE Network Security 15.1200.30.6(6.1-6.5), 200-301 1.1, 1.2, 1.3, 1.10, 1.12

Unit Name (2): Basic Switch and End Device Configuration (2 Days, Classroom Hours = 2, Lab Hours = 3)
●Implement initial settings including passwords, IP addressing, and default gateway parameters on a network switch and end devices.
CTSO Integration: (Personal Skills) Adaptability/Flexibility, Get Out-Of-The-Box
Professional Skills: Complex Communication 1.D
Academic Standards: A1.A-SSE.B.3
Technical Standard: ADE Network Security 15.1200.30.1(1.1-1.4), 200-301 1.2, 1.3, 1.10

Unit Name (3): Protocols and Models (3 Days, Classroom Hours = 3, Lab Hours = 4.5)
●Explain how network protocols enable devices to access local and remote network resources.
CTSO Integration: (Personal Skills) Adaptability/Flexibility, Get Out-Of-The-Box
Professional Skills: Legal and Ethical practices 8.E
Academic Standards: Complex Communication 1.D
Technical Standard: ADE Network Security 15.1200.30.8(8.1-8.12), 200-301 1.1, 1.2, 1.3, 1.4, 1.5

Unit Name (4): Physical Layer (3 Days, Classroom Hours = 3, Lab Hours = 4.5)
●Explain how physical layer protocols, services, and network media support communications across data networks.
CTSO Integration: (Personal Skills) Self-Motivated, Growing My Career Opportunities
Professional Skills: Complex Communication 1.D
Academic Standards: ELA.11-12.RI.2
Technical Standard: ADE Network Security 15.1200.30.7(7.1-7.8), 200-301 1.1, 1.2, 1.3, 1.10

Unit Name (5): Number Systems (3 Days, Classroom Hours = 3, Lab Hours = 4.5)
●Calculate numbers between decimal, binary, and hexadecimal systems.
CTSO Integration: SkillsUSA Regional Conference
Professional Skills: Complex Communication 1.D
Academic Standards: A1.A-SSE.B.3
Technical Standard: ADE Network Security 15.1200.30.5(5.1-5.6), 200-301 1.2

Unit Name (6): Data Link Layer (3 Days, Classroom Hours = 3, Lab Hours = 4.5)
●Explain how media access control in the data link layer supports communication across networks.
CTSO Integration: (Personal Skills) Self-Motivated, Growing My Career Opportunities
Professional Skills: Complex Communication 1.D
Academic Standards: ELA.11-12.RI.2
Technical Standard: 200-301, 1.1, 1.2, 1.3, 1.4, 1.5

Unit Name (7): Ethernet Switching (2 Days, Classroom Hours = 2, Lab Hours = 3)
●Explain how Ethernet operates in a switched network.
CTSO Integration: (Personal Skills) Self-Motivated, Growing My Career Opportunities
Professional Skills: Complex Communication 1.D
Academic Standards: A1.A-SSE.B.3
Technical Standard: 200-301 1.2, 1.3, 1.4

Unit Name (8): Network Layer (3 Days, Classroom Hours = 3, Lab Hours = 4.5)
●Explain how routers use network layer protocols and services to enable end-to-end connectivity.
CTSO Integration: (Personal Skills) Self-Motivated, Showing Initiative
Professional Skills: Complex Communication 1.D
Academic Standards: ELA.11-12.RI.2
Technical Standard: ADE Network Security 15.1200.30.8(8.1-8.12), 200-301 1.2, 1.4, 1.5, 1.7

Unit Name (9): Address Resolution (3 Days, Classroom Hours = 3, Lab Hours = 4.5)
●Explain how ARP and ND enable communication on a network.
CTSO Integration: (Personal Skills) Self-Motivated, Showing Initiative
Professional Skills: Complex Communication 1.D
Academic Standards: A1.A-SSE.B.3
Technical Standard: 200-301 1.3

Unit Name (10): Basic Router Configuration (6 Days, Classroom Hours = 6, Lab Hours = 9)
●Implement initial settings on a router and end devices
CTSO Integration: (Personal Skills) Self-Motivated, Showing Initiative
Professional Skills: Complex Communication 1.D
Academic Standards: Math 6.EE.A.2
Technical Standard: ADE Network Security 15.1200.30.3(3.1-3.11), 200-301 1.2, 1.3, 1.4, 1.8

Unit Name (11): IPv4 Addressing (2 Days, Classroom Hours = 2, Lab Hours = 3)
●Calculate an IPv4 subnetting scheme to efficiently segment a network.
CTSO Integration: (Personal Skills) Self-Motivated, Showing Initiative

Professional Skills: Financial Practices 9.B
Academic Standards: Math 5.NF.B.7, 6.RP.A.3, A1.A-SSE.B.3
Technical Standard: ADE Network Security
15.1200.30.5(5.1-5.6), 200-301 1.2, 1.4, 200-301 1.6

Unit Name (12): IPv6 Addressing (2 Days, Classroom Hours = 2, Lab Hours = 3)
●Implement an IPv6 addressing scheme.
CTSO Integration: (Workplace Skills) Decision Making, Make Informed Decisions: A How-To Guide
Professional Skills: Complex Communication 1.D
Academic Standards: Math 5.NF.B.7, 6.RP.A.3
Technical Standard: ADE Network Security
15.1200.30.5(5.1-5.6), 200-301 1.2, 1.3, 1.7, 1.10

Unit Name (13): ICMP (1 Day, Classroom Hours = 1, Lab Hours = 1.5)
●Use various tools to test network connectivity.
CTSO Integration: (Workplace Skills) Decision Making, Make Informed Decisions: A How-To Guide
Professional Skills: Complex Communication 1.D
Academic Standards: A1.A-SSE.B.3
Technical Standard: 200-301 1.2, 1.4

Unit Name (14): Transport Layer (1 Day, Classroom Hours = 1, Lab Hours = 1.5)
●Compare the operations of transport layer protocols in supporting end-to-end communication.
CTSO Integration: (Workplace Skills) Decision Making, Make Informed Decisions: A How-To Guide
Professional Skills: Complex Communication 1.D
Academic Standards: ELA.11-12.RI.2
Technical Standard: 200-301 1.5

Unit Name (15): Application (2 Days, Classroom Hours = 2, Lab Hours = 3)
●Explain the operation of application layer protocols in providing support to end-user applications.
CTSO Integration: (Workplace Skills) Multicultural Sensitivity and Awareness, Fostering Diversity
Professional Skills: Complex Communication 1.D
Academic Standards: A1.A-SSE.B.3
Work-based Learning: Mock Interviews - Interview Prep
Technical Standard: 200-301, 1.1, 1.5, 1.10

Unit Name (16): Network Security Fundamentals (1 Day, Classroom Hours = 1, Lab Hours = 1.5)
●Configure switches and routers with device hardening features to enhance security.
CTSO Integration: (Workplace Skills) Multicultural Sensitivity and Awareness, Fostering Diversity
Professional Skills: Organizational Structure 7.C
Work-based Learning: Guest Speaker (2 hours)
Technical Standard: ADE Network Security
15.1200.30.1(1.1-1.4), 200-301 1.1, 1.2, 1.3, 1.10

IT Security 15.1200.30
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Unit Name (17): Build a Small Network (1 Day, Classroom Hours = 1, Lab Hours = 1.5)
●Implement a network design for a small network to include a router, a switch, and end devices.
CTSO Integration: (Workplace Skills) Multicultural Sensitivity and Awareness, Fostering Diversity
Professional Skills: Thinking and Innovation 3.A
Academic Standards: Math 7.EE.B.3, ELA.11-12.W.4
Technical Standard: ADE Network Security
15.1200.30.3(3.1-3.11), 15.1200.30.9, 200-301 1.1, 1.2, 1.3, 1.4, 1.7, 1.10

Common AZCCR Math Standards (CAMS)
English Language Arts Standards (ELAS)

District Post-Assessment

Year 2- Semester 1
 ITS 202 – Cisco Networking
(18 weeks)

Switching, Routing, and Wireless Essentials v7.02 (9 Weeks)
Cisco Certified Network Associate (CCNA) (200-301)

Unit Name (1): Basic Device Configuration (2 Days, Classroom Hours = 2, Lab Hours = 3)
●Configure devices by using security best practices
CTSO Integration: SkillsUSA National Leadership and Skills Conference
Professional Skills: Legal and Ethical practices 8.H
Academic Standards: ELA.11-12.RI.2
Technical Standard: ADE Network Security
15.1200.30.2(2.1-2.7), 200-301 2.1, 2.7, 2.8, 3.1, 3.2, 3.3, 4.8, 4.9

Unit Name (2): Switching Concepts (2 Days, Classroom Hours = 2, Lab Hours = 3)
●Explain how Layer 2 switches forward data
CTSO Integration (Workplace Skills) Communication, The Message Is Clear
Professional Skills: Collaboration 2.C
Academic Standards: A1.A-SSE.B.3
Technical Standard: 200-301 1.13, 2.1

Unit Name (3): VLANs (2 Days, Classroom Hours = 2, Lab Hours = 3)
●Implement VLANs and trunking in a switched network.
CTSO Integration: (Workplace Skills) Communication, The Message Is Clear
Professional Skills: Collaboration 2.C
Academic Standards: ELA.11-12.RI.2

Technical Standard: ADE Network Security
15.1200.30.3(3.1-3.11), 200-301 2.1, 2.2, 2.8, 4.4, 4.8, 4.9

Unit Name (4): Inter-VLAN Routing (3 Days, Classroom Hours = 3, Lab Hours = 4.5)
●Troubleshoot inter-VLAN routing on Layer 3 devices
CTSO Integration (Workplace Skills) Communication, The Message Is Clear
Professional Skills: Collaboration 2.C
Academic Standards: A1.A-SSE.B.3
Technical Standard: ADE Network Security
15.1200.30.1(1.1-1.4), 200-301 2.1, 2.2, 2.4, 3.1, 3.3

Unit Name (5): STP (4 Days, Classroom Hours = 4, Lab Hours = 6)
●Explain how STP enables redundancy in a Layer 2 network.
CTSO Integration: (Workplace Skills) Leadership, Opening the Door
Professional Skills: Collaboration 2.C
Academic Standards: ELA.11-12.RI.2
Technical Standard: 200-301 2.1. 2.2, 2.5, 2.7, 3.1, 4.3

Unit Name (6): EtherChannel (2 Days, Classroom Hours = 2, Lab Hours = 3)
●Troubleshoot EtherChannel on switched links.
CTSO Integration: (Workplace Skills) Leadership, Opening the Door
Professional Skills: Collaboration 2.C
Academic Standards: ELA.11-12.RI.2
Technical Standard: 200-301 2.1, 2.2, 2.4, 2.6, 2.7

Unit Name (7): DHCPv4 (3 Days, Classroom Hours = 3, Lab Hours = 4.5)
●Implement DHCPv4 to operate across multiple LANs.
CTSO Integration (Workplace Skills) Teamwork, Capitalizing on Strengths
Professional Skills: Collaboration 2.C
Academic Standards: A1.A-SSE.B.3
Technical Standard: ADE Network Security
15.1200.30.9(9.1-9.9), 200-301 3.1, 4.1, 4.2, 4.3, 4.6, 4.9

Unit Name (8): SLAAC and DHCPv6 Concepts (4 Days, Classroom Hours = 4, Lab Hours = 6)
●Configure dynamic address allocation in IPv6 networks.
CTSO Integration (Workplace Skills) Teamwork, Capitalizing on Strengths
Professional Skills: Collaboration 2.C
Academic Standards: A1.A-SSE.B.3
Technical Standard: ADE Network Security
15.1200.30.9(9.1-9.9), 200-301 2.7 , 4.2, 4.3, 4.6

Unit Name (9): FHRP Concepts (2 Days, Classroom Hours = 2, Lab Hours = 3)
●Explain how FHRPs provide default gateway services in a

redundant network.
CTSO Integration: (Workplace Skills) Teamwork, Capitalizing on Strengths
Professional Skills: Collaboration 2.C
Academic Standards: ELA.11-12.RI.2
Technical Standard: 200-301 2.2, 2.3, 3.1

Unit Name (10): LAN Security Concepts (3 Days, Classroom Hours = 3, Lab Hours = 4.5)
●Explain how vulnerabilities compromise LAN security
CTSO Integration (Workplace Skills) Teamwork, Capitalizing on Strengths
Professional Skills: Thinking and Innovation 3.E
Academic Standards: ELA.11-12.RI.2
Technical Standard: ADE Network Security
15.1200.30.1(1.1-1.4), 200-301 2.1, 2.2, 2.3, 2.7, 2.8, 4.1, 4.2, 4.3, 4.4, 4.5, 4.6, 4.8, 4.9

Unit Name (11): Switch Security Configuration (3 Days, Classroom Hours = 3, Lab Hours = 4.5)
●Implement switch security to mitigate LAN attacks
CTSO Integration (Workplace Skills) Teamwork, Cooperation Gets the Job Done
Professional Skills: Thinking and Innovation 3.E
Academic Standards: ELA.11-12.RI.2
Technical Standard: ADE Network Security
15.1200.30.3(3.1-3.11), 15.1200.30.10, 200-301 2.1, 2.2, 2.3, 2.4, 2.6, 4.3, 4.5, 4.6

Unit Name (12): WLAN (2 Days, Classroom Hours = 2, Lab Hours = 3)
●Explain how WLANs enable network connectivity.
CTSO Integration (Workplace Skills) Teamwork, Cooperation Gets the Job Done
Professional Skills: Collaboration 2.C
Academic Standards: ELA.11-12.RI.2
Technical Standard: ADE Network Security
15.1200.30.8(8.1-8.12), 200-301 2.1, 2.2, 2.4, 2.6, 2.7, 2.8, 2.9, 4.9, 5.9, 5.10

Unit Name (13): WLAN Configuration (2 Days, Classroom Hours = 2, Lab Hours = 3)
●Implement a WLAN using a wireless router and WLC.
CTSO Integration (Workplace Skills) Teamwork, Cooperation Gets the Job Done
Professional Skills: Legal and Ethical practices 8.I
Academic Standards: ELA.11-12.RI.2
Technical Standard: 200-301 2.1, 2.2, 2.3, 2.7, 2.8, 2.9, 4.3, 4.4, 4.8, 4.9, 5.9, 5.10

Unit Name (14): Routing Concepts (2 Days, Classroom Hours = 2, Lab Hours = 3)
●Explain how routers use information in packets to make forwarding decisions.

CTSO Integration (Workplace Skills) Teamwork, Cooperation Gets the Job Done
Professional Skills: Thinking and Innovation 3.E
Academic Standards: ELA.11-12.RI.2
Technical Standard: ADE Network Security
15.1200.30.8(8.1-8.12), 200-301 2.3, 2.7, 2.8, 3.1, 3.2, 3.3, 3.4, 4.8

Unit Name (15): IP Static Routing (2 Days, Classroom Hours = 2, Lab Hours = 3)
●Configure IPv4 and IPv6 static routes.
CTSO Integration (Workplace Skills) Teamwork, Leading and Following is a Two-way Street Professional Skills: Thinking and Innovation 3.E
Academic Standards: A1.A-SSE.B.3
Technical Standard: 200-301 3.1, 3.2, 3.3

Unit Name (16): Troubleshoot Static and Default Routes (2 Days, Classroom Hours = 2, Lab Hours = 3)
●Troubleshoot Static and Default Routes
CTSO Integration
(Workplace Skills)
Teamwork,
Leading and
Following is a
Two-way Street
Professional Skills:
Thinking and
Innovation 3.C
Academic Standards: A1.A-SSE.B.3
Technical Standard: 200-301 2.1, 3.1, 3.2, 3.3, 4.6

Enterprise Networking, Security, and Automation v7 (9 Weeks)
Cisco Certified Network Associate (CCNA) (200-301)

Unit Name (1): Single-Area OSPFv2 Concepts (2 Days, Classroom Hours = 2, Lab Hours = 3)
●Explain how single-area OSPF operates in both point-to-point and broadcast multiaccess networks. CTSO Integration (Workplace Skills) Teamwork, Leading and Following is a Two-way Street Professional Skills: Thinking and Innovation 3.E
Academic Standards: ELA.11-12.RI.2
Technical Standard: 200-301 6.1

Unit Name (2): Single-Area OSPFv2 Configuration (5 Days, Classroom Hours = 5, Lab Hours = 7.5)
●Implement single-area OSPFv2 in both point-to-point and broadcast multiaccess networks. CTSO Integration (Workplace Skills) Teamwork, Leading and Following is a Two-way Street Professional Skills: Thinking and Innovation 3.E
Academic Standards: ELA.11-12.RI.2
Technical Standard: 200-301 6.1

Unit Name (3): Network Security Concepts (2 Days, Classroom Hours = 2, Lab Hours = 3)
●Explain how vulnerabilities, threats, and exploits can be mitigated to enhance network security CTSO Integration (Workplace Skills) Teamwork, Leading and Following is a Two-way Street
Professional Skills: Thinking and Innovation 3.E
Academic Standards: ELA.11-12.SL.4, ELA.11-12.SL.6
Technical Standard: ADE Network Security
15.1200.30.3(3.1-3.11), 200-301 5.1, 5.3, 5.4, 5.6, 5.7

Unit Name (4): ACL Concepts (4 Days, Classroom Hours = 4, Lab Hours = 6)
●Explain how ACLs are used as part of a network security policy.
CTSO Integration (Workplace Skills) Teamwork, Trust Matters
Professional Skills: Thinking and Innovation 3.E
Academic Standards: ELA.11-12.RI.2
Technical Standard: ADE Network Security
15.1200.30.3(3.1-3.11), 200-301 5.6

Unit Name (5): ACLs for IPv4 Configuration (4 Days, Classroom Hours = 4, Lab Hours = 6)
●Implement IPv4 ACLs to filter traffic and secure administrative access.
CTSO Integration (Workplace Skills) Teamwork, Trust Matters
Professional Skills: Thinking and Innovation 3.EA
Academic Standards: ELA.11-12.RI.2
Technical Standard: ADE Network Security
15.1200.30.10(10.1-10.9), 200-301 5.4, 5.6, 5.7

Unit Name (6): NAT for IPv4 (4 Days, Classroom Hours = 4, Lab Hours = 6)
●Configure NAT services on the edge router to provide IPv4 address scalability CTSO Integration (Workplace Skills) Teamwork, Trust Matters
Professional Skills: Thinking and Innovation 3.EA
Academic Standards: Thinking and Innovation 3.E
Technical Standard: ADE Network Security
15.1200.30.5(5.1-5.6), 200-301 5.7

Unit Name (7): WAN Concepts (2 Days, Classroom Hours = 2, Lab Hours = 3)
●Explain how WAN access technologies can be used to satisfy business requirements. CTSO Integration (Workplace Skills) Teamwork, Trust Matters
Professional Skills: Thinking and Innovation 3.E
Academic Standards: ELA.11-12.RI.2
Work-based Learning: N/A
Technical Standard: 200-301 5.5

Unit Name (8): VPN and IPsec Concepts (2 Days, Classroom Hours = 2, Lab Hours = 3)

●Explain how VPNs and IPsec secure site-to-site and remote access connectivity. CTSO Integration (Technical Skills) Service Orientation, Everyone is a Customer Professional Skills: Thinking and Innovation 3.E
Academic Standards: ELA.11-12.RI.2
Work-based Learning: AFCEA Midnight Sun Competition
Technical Standard: ADE Network Security
15.1200.30.10(10.1-10.9), 200-301 5.3, 5.4, 5.8

Unit Name (9): QoS Concepts (4 Days, Classroom Hours = 4, Lab Hours = 6)
●Explain how networking devices implement QoS.
CTSO Integration (Technical Skills) Service Orientation, Everyone is a Customer Professional Skills: Thinking and Innovation 3.E
Academic Standards: ELA.11-12.RI.2
Technical Standard: 200-301 5.6

Unit Name (10): Network Management (5 Days, Classroom Hours = 5, Lab Hours = 7.5)
●Implement protocols to manage the network.
CTSO Integration (Technical Skills) Service Orientation, Everyone is a Customer Professional Skills: N/A
Academic Standards: ELA.11-12.RI.2
Work-based Learning: Mock Interview
Technical Standard: ADE Network Security
15.1200.30.1(1.1-1.4), 200-301 5.2, 5.3, 5.4, 5.7

Unit Name (11): Network Design (2 Days, Classroom Hours = 2, Lab Hours = 3)
●Troubleshoot enterprise networks
CTSO Integration (Technical Skills) Service Orientation, Be All You Can Be at Work
Professional Skills: Thinking and Innovation 3.A, 3B
Academic Standards: ELA.11-12.RI.2
Technical Standard: ADE Network Security
15.1200.30.11(11.1-11.6), 200-301 5.6

Unit Name (12): Network Troubleshooting (3 Days, Classroom Hours = 3, Lab Hours = 4.5)
●Troubleshoot enterprise networks
CTSO Integration (Technical Skills) Service Orientation, Be All You Can Be at Work
Professional Skills: Thinking and Innovation 3.A, 3C
Academic Standards: ELA.11-12.RI.2
Technical Standard: ADE Network Security
15.1200.30.11(11.1-11.6), 200-301 5.6, 5.7, 6.1

Unit Name (13): Network Virtualization (2 Days, Classroom Hours = 2, Lab Hours = 3)
●Explain the purpose and characteristics of network virtualization
CTSO Integration (Technical Skills) Service Orientation, Be All You Can Be at Work

Professional Skills: Thinking and Innovation 3.E
Academic Standards: ELA.11-12.RI.2
Work-based Learning: Mock Business/Industry Project - NICE Challenge (24 hours)
Technical Standard: 200-301 5.7, 6.1, 6.2

Unit Name (14): Network Automation (.5 Week)
●Explain how network automation is enabled through RESTful APIs and configuration management tools. CTSO Integration (Technical Skills) Service Orientation, Be All You Can Be at Work
Professional Skills: Thinking and Innovation 3.E
Academic Standards: ELA.11-12.RI.2
Technical Standard: ADE Network Security
15.1200.30.11(11.1-11.6), 200-301 5.1, 5.4, 5.8, 6.1, 6.3, 6.4, 6.5, 6.6, 6.7

Year 2- Semester 2
ITS 202 - IT Security
(18 weeks)

TestOut Security Pro 7.0 (9 Weeks)
Certification: CompTIA Security+ (SY0-601), TestOut Security Pro Certification

Unit Name (1): Introduction (1 Day, Classroom Hours = 1, Lab Hours = 1.5)
●Explain different threat actors, vectors, and intelligence sources.
●Explain the security concerns associated with various types of vulnerabilities.
●Summarize the basics of cryptographic concepts.
●Explain the key aspects of digital forensics.
●Summarize the risk management processes and concepts.
●Explain privacy and sensitive data concepts in relation to security.
●Compare and contrast different types of social engineering techniques.
●Explain the techniques used in penetration testing.
●Given a scenario, implement host or application security solutions.
●Given a scenario, install and configure wireless security settings.
●Given an incident, apply mitigation techniques or controls to secure an environment.
●Explain the importance of policies to organizational security.
CTSO Integration (Technical Skills) Professional Development, Taking Action/Professional Growth Professional Skills: Thinking and Innovation 3.A
Academic Standards: ELA.11-12.RI.2
Work-based Learning: Guest Speaker (2 hours)
Technical Standard: ADE Network Security
15.1200.30.2(2.1-2.7), SY0-601 1.1, 1.5, 1.6, 1.8, 2.8, 3.2, 3.4, 4.4, 4.5, 5.3, 5.4, 5.5

Unit Name (2): Threats, Attacks, and Vulnerabilities (3 Days, Classroom Hours = 3, Lab Hours = 4.5)

●Compare and contrast different types of social engineering techniques.
●Explain different threat actors, vectors, and intelligence sources.
●Explain the importance of policies to organizational security.
●Given a scenario, analyze potential indicators to determine the type of attack.
●Given a scenario, analyze potential indicators associated with application attacks.
●Explain the security concerns associated with various types of vulnerabilities.
●Compare and contrast different types of controls.
●Summarize risk management processes and concepts.
CTSO Integration (Technical Skills) Professional Development, Taking Action/Professional Growth Professional Skills: Intergenerational and cross-cultural competence 6.A
Academic Standards: ELA.11-12.RI.2
Technical Standard: SY0-601 1.1, 1.2, 1.3, 1.5, 1.6, 5.1, 5.3, 5.4, TO 3.1, 5.2

Unit Name (3): Physical (3 Days, Classroom Hours = 3, Lab Hours = 4.5)

●Explain the importance of physical security controls.
●Given a scenario, implement identity and account management controls.
●Summarize the importance of policies, processes, and procedures for incident response.
●Given a scenario, analyze potential indicators to determine the type of attack.
●Given a scenario, implement cybersecurity resilience.
CTSO Integration (Technical Skills) Professional Development, Taking Action/Professional Growth Professional Skills: Collaboration: 2.B, Thinking and Innovation 3.D
Academic Standards: N/A
Technical Standard: ADE Network Security 15.1200.30.4(4.1-4.4), SY0-601 1.2, 2.5, 2.7, 3.7, 4.2, TO 2.1

Unit Name (4): Networks and Hosts Design and Diagnosis (3 Days, Classroom Hours = 3, Lab Hours = 4.5)

●Explain the security concerns associated with various types of vulnerabilities.
●Explain the importance of security concepts in an enterprise environment.
●Given a scenario, implement secure protocols.
●Given a scenario, implement host or application security solutions.
●Given a scenario, implement secure network designs.
●Given a scenario, implement identity and account management controls.
●Explain the key aspects of digital forensics.
●Given a scenario, analyze potential indicators to determine the type of attack.

●Summarize authentication and authorization design controls.
●Given a scenario, apply cybersecurity solutions to the cloud.
●Given a scenario, implement authentication and authorization solutions.
●Given a scenario, use the appropriate tool to assess organizational security.
CTSO Integration (Technical Skills) Professional Development, Investing In Yourself
Professional Skills: Intergenerational and cross-cultural competence 6.C
Academic Standards: ELA.11-12.RI.2
Technical Standard: SY0-601 1.2, 1.6, 2.1, 2.4, 3.1, 3.2, 3.3, 3.6, 3.7, 3.8, 4.1, 4.5, TO 3.1

Unit Name (5): Devices and Infrastructure (4 Days, Classroom Hours = 4, Lab Hours = 6)

●Explain the importance of security concepts in an enterprise environment.
●Given a scenario, implement secure network designs.
●Given an incident, apply mitigation techniques or controls to secure an environment.
●Explain the importance of physical security controls.
●Given a scenario, implement host or application security solutions.
●Compare and contrast different types of social engineering techniques.
●Summarize authentication and authorization design concepts.
●Given a scenario, analyze potential indicators associated with network attacks.
●Explain the techniques used in penetration testing.
●Given a scenario, apply cybersecurity solutions to the cloud.
●Explain the key aspects of digital forensics.
●Explain the importance of policies to organizational security.
●Summarize risk management processes and concepts.
●Given a scenario, analyze potential indicators associated with application attacks.
●Given a scenario, install and configure wireless security settings.
●Given a scenario, implement identity and account management controls.
●Given a scenario, use the appropriate tool to access organizational security.
●Summarize the techniques used in security assessments.
●Summarize the basics of cryptographic concepts.
●Explain the security implications of embedded and specialized systems.
●Explain the security concerns associated with various types of vulnerabilities.
●Given a scenario, implement secure protocols.
CTSO Integration (Technical Skills) Professional Development, Investing In Yourself
Professional Skills: Collaboration 2.C
Academic Standards: ELA.11-12.RI.2

Technical Standard: SY0-601 1.1, 1.2, 1.3, 1.4, 1.7, 1.6, 1.8, 2.1, 2.4, 2.6, 2.7, 2.8, 3.1, 3.2, 3.3, 3.4, 3.6, 3.7, 4.1, 4.4, 4.5, 5.3, 5.4, TO 2.1, 2.2, 3.2

Unit Name (6): Identity, Access, and Account Management (3 Days, Classroom Hours = 3, Lab Hours = 4.5)

●Given a scenario, analyze potential indicators associated with application attacks.
●Summarize authentication and authorization design concepts.
●Given a scenario, implement authentication and authorization solutions.
●Compare and contrast various types of controls.
●Explain the importance of policies to organizational security.
●Given a scenario, implement identity and account management controls.
●Given a scenario, implement secure network designs.
●Given a scenario, apply cybersecurity solutions to the cloud.
●Explain the security concerns associated with various types of vulnerabilities.
●Given a scenario, implement secure protocols.
CTSO Integration (Technical Skills) Professional Development, Taking Action/Professional Growth
Professional Skills: Collaboration 2.C
Academic Standards: ELA.11-12.RI.2
Technical Standard: ADE Network Security 15.1200.30.1(1.1-1.4), 15.1200.30.3, SY0-601 1.3, 1.6, 2.4, 3.1, 3.3, 3.6, 3.7, 3.8, 5.1, 5.3, TO 1.1, 1.2

Unit Name (7): Cryptography and PKI (3 Days, Classroom Hours = 3, Lab Hours = 4.5)

●Given a scenario, analyze potential indicators to determine the type of attack.
●Summarize the basics of cryptographic concepts.
●Explain the importance of security concepts in an enterprise environment.
●Given a scenario, implement host or application security solutions.
●Explain the key aspects of digital forensics.
●Explain the security concerns associated with various types of vulnerabilities.
●Summarize authentication and authorization design concepts.
●Given a scenario, implement secure protocols.
●Given a scenario, implement public key infrastructure.
CTSO Integration (Technical Skills) Professional Development, Investing In Yourself
Professional Skills: Thinking and Innovation 3.E
Academic Standards: ELA.11-12.RI.2
Work-based Learning: Mock Business/Industry Project - NICE Challenge 48 hour event cross campus (Cybersecurity event with Industry)
Technical Standard: SY0-601 1.2, 1.6, 2.1, 2.4, 2.8, 3.1, 3.2, 3.9, 4.5, TO 4.2

Unit Name (8): Wireless Threats (3 Days, Classroom Hours = 3, Lab Hours = 4.5)

●Given a scenario, install and configure wireless security settings.
●Given a scenario, implement secure mobile solutions.
●Given a scenario, analyze potential indicators associated with network attacks.
●Given a scenario, use the appropriate tool to access organizational security.
●Explain the security concerns associated with various types of vulnerabilities.
●Given a scenario, implement host or application security solutions.
●Given a scenario, implement secure network designs.
●Given a scenario, implement authentication and authorization solutions. CTSO Integration (Technical Skills) Professional Development, Investing In Yourself Professional Skills: Thinking and Innovation 3.E
Academic Standards: ELA.11-12.RI.2
Technical Standard: SY0-601 1.4, 1.6, 3.2, 3.3, 3.4, 3.5, 3.8, 4.1, TO 2.2

Unit Name (9): Virtualization, Cloud Security, and Securing Mobile Devices (4 Days, Classroom Hours = 4, Lab Hours = 6)
●Summarize virtualization and cloud computing concepts.
●Given a scenario, implement host or application security solutions.
●Given a scenario, implement secure network designs.
●Given a scenario, apply cybersecurity solutions to the cloud.
●Explain the importance of security concepts in an enterprise environment.
●Given a scenario, implement secure mobile solutions.
●Explain the security concerns associated with various types of vulnerabilities.
●Given a scenario, implement identity and account management controls.
●Given an incident, apply mitigation techniques or controls to secure an environment.
●Given a scenario, implement secure protocols.
●Explain the importance of policies to organizational security.
●Explain the security implications of embedded and specialized systems. CTSO Integration (Technical Skills) Professional Development, Investing In Yourself Professional Skills: Intergenerational and cross-cultural competence 6.B Academic Standards: ELA.11-12.RI.2
Technical Standard: SY0-601 1.6, 2.1, 2.2, 2.6, 3.1, 3.2, 3.3, 3.5, 3.6, 3.7, 4.4, 5.3, TO 2.2, 3.3

Unit Name (10): Securing Data and Applications (3 Days, Classroom Hours = 3, Lab Hours = 4.5)

●Explain the importance of security concepts in an enterprise environment.
●Given a scenario, implement secure protocols.
●Given a scenario, implement host or application security

solutions.
●Explain privacy and sensitive data concepts in relation to security.
●Given a scenario, analyze potential indicators associated with application attacks.
●Given a scenario, analyze potential indicators associated with network attacks.
●Explain the security concerns associated with various types of vulnerabilities.
●Summarize secure application development, deployment, and automation concepts.
●Given a scenario, use the appropriate tool to access organizational security.
●Explain different threat actors, vectors, and intelligence sources.
●Given a scenario, implement public key infrastructure.
CTSO Integration: (Workplace Skills) Planning, Organizing and Management, Planning to Plan Professional Skills: Complex Communication 1.C
Academic Standards: ELA.11-12.RI.2
Technical Standard: SY0-601 1.3, 1.4, 1.5, 1.6, 2.1, 2.3, 3.1, 3.2, 3.9, 4.1, 5.5, TO 3.2

Unit Name (11): Security Assessments (3 Days, Classroom Hours = 3, Lab Hours = 4.5)
●Explain the techniques used in penetration testing.
●Compare and contrast different types of social engineering techniques.
●Given a scenario, use the appropriate tool to access organizational security.
●Summarize the techniques used in security assessments.
●Given a scenario, implement host or application security solutions.
●Given a scenario, implement secure network designs.
●Explain different threat actors, vectors, and intelligence sources.
●Explain the security concerns associated with various types of vulnerabilities.
●Given an incident, apply mitigation techniques or controls to secure an environment.
●Given an incident, utilize appropriate data sources to support an investigation.
●Given a scenario, analyze potential indicators associated with network attacks.
●Given a scenario, analyze potential indicators to determine the type of attack.
●Summarize the basics of cryptographic concepts.
●Given a scenario, implement identity and account management controls.
CTSO Integration: (Workplace Skills) Planning, Organizing and Management, Planning to Plan Professional Skills: Legal and Ethical practices 8.F
Academic Standards: ELA.11-12.RI.2
Technical Standard: SY0-601 1.1, 1.2, 1.4, 1.5, 1.6, 1.7, 1.8, 2.8, 3.2, 3.3, 3.7, 4.1, 4.3, 4.4, TO 5.2

Unit Name (12): Incident Response, Forensics, and Recovery (3 Days, Classroom Hours = 3, Lab Hours = 4.5)
●Summarize the importance of policies, processes, and procedures for incident response.
●Given an incident, utilize appropriate data sources to support an investigation.
●Explain the key aspects of digital forensics.
●Given a scenario, implement secure network designs.
●Given a scenario, implement identity and account management controls.
●Given an incident, apply mitigation techniques or controls to secure an environment.
●Summarize the techniques used in security assessments.
●Explain the importance of security concepts in an enterprise environment.
●Given a scenario, implement secure protocols.
●Given a scenario, use the appropriate tool to access organizational security.
●Given a scenario, analyze potential indicators associated with network attacks.
●Given a scenario, implement cybersecurity resilience.
CTSO Integration: (Workplace Skills) Planning, Organizing and Management, Planning to Plan Professional Skills: Complex Communication 1.D
Academic Standards: ELA.11-12.RI.2
Technical Standard: SY0-601 1.4, 1.7, 2.1, 2.5, 3.1, 3.2, 3.3, 3.7, 4.1, 4.2, 4.3, 4.4, 4.5, TO 4.1

Unit Name (13): Risk Management (3 Days, Classroom Hours = 3, Lab Hours = 4.5)
●Explain the importance of security concepts in an enterprise environment.
●Explain the importance of policies to organizational security.
●Summarize the importance of policies, processes, and procedures for incident response.
●Summarize risk management processes and concepts.
●Compare and contrast different types of social engineering techniques.
●Explain different threat actors, vectors, and intelligence sources.
●Given a scenario, implement secure protocols.
●Given a scenario, implement host or application security solutions.
CTSO Integration: (Workplace Skills) Planning, Organizing and Management, Planning to Plan Professional Skills: Thinking and Innovation 3.B
Academic Standards: ELA.11-12.RI.2
Technical Standard: SY0-601 1.1, 1.5, 2.1, 3.1, 3.2, 4.2, 5.3, 5.4, TO 3.2

Unit Name (14): Governance and Compliance (3 Days, Classroom Hours = 3, Lab Hours = 4.5)
●Given a scenario, apply cybersecurity solutions to the cloud.

●Given a scenario, implement identity and account management controls.
●Explain the importance of applicable regulations, standards, or frameworks that impact organizational security posture.
 ●Explain the importance of policies to organizational security.
●Compare and contrast various types of controls.
●Explain privacy and sensitive data concepts in relation to security.
CTSO Integration: (Workplace Skills) Planning, Organizing and Management, Managing to Plan Professional Skills: Thinking and Innovation 3.E
Academic Standards: ELA.11-12.RI.2
Technical Standard: SY0-601 2.7, 3.6, 3.7, 5.1, 5.2, 5.3, 5.5, TO 5.1

EC-Council Ethical Hacking Essentials (9 Weeks)
Certification: Ethical Hacking Essentials (112-52)

Unit Name (1): Information Security Fundamentals (3 Days, Classroom Hours = 3, Lab Hours = 4.5)
●Understanding the Need for Security.
●Understanding the Elements of Information Security.
●Understanding the Security, Functionality, and Usability Triangle.
●Understanding Motives, Goals, and Objectives of Information Security Attacks.
●Overview of Classification of Attacks.
●Overview of Information Security Attack Vectors.
●Overview of Various Information Security Laws and Regulations.
CTSO Integration:
(Workplace Skills)
Planning, Organizing
and Management,
Managing to Plan
Professional Skills:
Complex
Communication 1.D
Academic Standards: A1.A-SSE.B.3
Technical Standard: NICE KSA ID: K0003, K0004, K0160, K0161, K0410, K0411

Unit Name (2): Ethical Hacking Fundamentals (3 Days, Classroom Hours = 3, Lab Hours = 4.5)
●Understanding the Cyber Kill Chain Methodology.
●Understanding Tactics, Techniques, and Procedures (TTPs).
●Overview of Indicators of Compromise (IoCs).
●Overview of Hacking Concepts and Hacker Classes.
●Understanding Different Phases of Hacking Cycle.
●Understanding Ethical Hacking Concepts and Its Scope.
●Overview of Ethical Hacking Tools.
CTSO Integration: (Workplace Skills) Planning, Organizing and

Management, Managing to Plan Professional Skills: Organizational Structure 7.B
Academic Standards: Math 6.RP.A.3
Technical Standard: NICE KSA ID: K0110, K0119, K0144, K0162, K0177, K0206, K0310, K0408, K0436, K0474, K0536, K0548

Unit Name (3): Information Security Threats and Vulnerability Assessment (4 Days, Classroom Hours = 4, Lab Hours = 6)
●Understanding the Threat and Threat Sources.
●Understanding Malware and Components of Malware.
●Overview of Common Techniques Attackers use to Distribute Malware on the Web.
●Overview of Different Types of Malware and Malware Countermeasures.
●Understanding Vulnerability and Vulnerability Classification.
●Understanding Vulnerability Assessment and Types of Vulnerability Assessment.
●Overview of Vulnerability Scoring Systems and Vulnerability Management Life Cycle.
●Understanding Vulnerability Assessment Tools and Vulnerability Exploitation.
CTSO Integration:
(Workplace Skills)
Planning, Organizing
and Management,
Managing to Plan
Professional Skills:
Organizational
Structure 7.A
Academic Standards: ELA.11-12.RI.2
Technical Standard: NICE KSA ID: K0005, K0013, K0191, K0392, K0475, K0480, K0536, K0604, K0612

Unit Name (4): Password Cracking Techniques and Countermeasures (3 Days, Classroom Hours = 3, Lab Hours = 4.5)
●Understanding the Password Cracking and Password Complexity.
●Understanding Microsoft Authentication.
●Understanding Various Types of Password Attacks.
●Overview of Password Cracking Tools.
●Understanding Countermeasures against Password Attacks.
CTSO Integration: (Workplace Skills) Communication, Putting Your Best Communication Forward Professional Skills: Thinking and Innovation 3.E
Academic Standards: ELA.11-12.RI.2
Technical Standard: NICE KSA ID: K0362, K0536

Unit Name (5): Social Engineering Techniques and Countermeasures (3 Days, Classroom Hours = 3, Lab Hours = 4.5)
●Understanding Social Engineering Concepts.

- Understanding Various Social Engineering Techniques.
- Understanding Insider Threats.
- Understanding Identity Theft.
- Understanding Different Social Engineering Countermeasures.
- Understanding Different Insider Threats and Identity Theft Countermeasures. CTSO Integration: (Workplace Skills) Communication, Putting Your Best Communication Forward
Professional Skills: Thinking and Innovation 3.E
Academic Standards: ELA.11-12.RI.2
Technical Standard: NICE KSA ID: K0036

Unit Name (6): Network Level Attacks and Countermeasures (4 Days, Classroom Hours = 4, Lab Hours = 6)
- Understanding Packet Sniffing and Types of Sniffing.
- Understanding Various Sniffing Techniques and Tools.
- Understanding Different Sniffing Countermeasures.
- Overview of Different Types of DoS and DDoS Attacks.
- Understanding Different DoS/DDoS Attack Tools.
- Understanding Different DoS/DDoS Attack Countermeasures and Protection Tools. ●Overview of Session Hijacking and Types of Session Hijacking.
- Understanding Different Session Hijacking Tools and Countermeasures.
CTSO Integration: (Workplace Skills) Communication, Putting Your Best Communication Forward Professional Skills: Thinking and Innovation 3.E
Academic Standards: ELA.11-12.RI.2
Technical Standard: NICE KSA ID: K0106, K0160, K0362

Unit Name (7): Web Application Attacks and Countermeasures (3 Days, Classroom Hours = 3, Lab Hours = 4.5)
- Understanding Web Server Concepts and Attacks.
- Understanding Different Web Server Attack Tools and Countermeasures.
- Overview of Web Application Architecture and Vulnerability Stack.
- Understanding Different Web Application Threats and Attacks.
- Understanding Different Web Application Attack Tools and Countermeasures.
- Overview of Different Types of SQL Injection Attacks.
- Understanding Different SQL Injection Tools.
- Understanding Different SQL Injection Attack Countermeasures.
CTSO Integration: (Workplace Skills) Communication, The Message Is Clear
Professional Skills: Thinking and Innovation 3.E
Academic Standards: ELA.11-12.RI.2
Technical Standard: NICE KSA ID: K0009, K0070, K0362, K0398, K0624

Unit Name (8): Wireless Attacks and Countermeasures (4 Days, Classroom Hours = 4, Lab Hours = 6)
- Overview of Wireless Terminology.
- Overview of Wireless Encryption Algorithms.
- Understanding Wireless Network-Specific Attack Techniques.

- Overview of Different Wireless Attack Tools.
- Understanding Bluetooth Attack Techniques.
- Overview of Various Wireless Attack Countermeasures.
- Overview of Different Wireless Security Tools.
CTSO Integration: Mock Business/Industry Project - NICE Challenge
Professional Skills: Complex Communication 1.C
Academic Standards: ELA.11-12.RI.2
Technical Standard: NICE KSA ID: K0274, K0362, K0375, K0428

Unit Name (9): Mobile Attacks and Countermeasures (3 Days, Classroom Hours = 3, Lab Hours = 4.5)
- Understanding Anatomy of a Mobile Attack.
- Understanding Mobile Platform Attack Vectors.
- Understanding Mobile Platform Vulnerabilities.
- Understanding Mobile Device Management.
- Overview of Mobile Security Guidelines and Security Tools.
CTSO Integration: Mock Business/Industry Project - NICE Challenge
Professional Skills: Financial Practices 9.C
Academic Standards: ELA.11-12.RI.2
Technical Standard: NICE KSA ID: K0070, K0283, K0362

Unit Name (10): IoT and OT Attacks and Countermeasures (3 Days, Classroom Hours = 3, Lab Hours = 4.5)
- Understanding IoT Concepts.
- Understanding IoT attacks and IoT attack Tools.
- Overview of IoT Attack Countermeasures and Security Tools.
- Understanding OT Concepts.
- Understanding OT Attacks and OT Attack Tools.
- Overview of OT Attack Countermeasures and Security Tools.
CTSO Integration: Mock Business/Industry Project - NICE Challenge
Professional Skills: Collaboration 2.A
Academic Standards: ELA.11-12.L.4
Technical Standard: NICE KSA ID: K0059, K0362, K0432

Unit Name (11): Cloud Computing Threats and Countermeasures (2,5 Days, Classroom Hours = 2.5, Lab Hours = 3,75)
- Understanding Cloud Computing Concepts.
- Overview of Container Technology.
- Understanding Cloud Computing Threats.
- Overview of Cloud Attacks and Tools.
- Understanding Cloud Attack Countermeasures.
- Overview of Various Cloud Computing Security Tools.
CTSO Integration: (Technical Skills) Professional Development, Investing In Yourself Professional Skills: Collaboration 2.B
Academic Standards: ELA.11-12.W.8, ELA.11-12.SL.4
Technical Standard: NICE KSA ID: K0194, K0230, K0362

Unit Name (12): Penetration Testing Fundamentals (2,5 Days, Classroom Hours = 2.5, Lab Hours = 3,75)
- Understanding Penetration Testing and its Benefits.
- Understanding Types of Penetration Testing.
- Understanding Phases of Penetration Testing.

●Overview of Penetration Testing Methodologies.
●Overview of Guidelines and Recommendations for Penetration Testing. ●Understanding Risks Associated with Penetration Testing.
CTSO Integration: (Technical Skills) Professional Development, Investing In Yourself Professional Skills: Complex Communication 1.D
Academic Standards: ELA.11-12.W.7
Technical Standard: NICE KSA ID: K0342, K0367

ADE Technical Skills Assessment (TSA)
Network Security 15.1200.3

Common AZCCR Math Standards (CAMS)
English Language Arts Standards (ELAS)