

IT Security | Scope & Sequence

Year 1- Semester 1

ITS 101 - Network Security I

(18 weeks)

District Pre-Assessment

Technology in Action 16 Edition (9 Weeks)

Unit Name: (1) The Impact of Technology in a Changing World (.5 weeks)

- Discuss the impact of the tools of modern technology on national and global issues
- Describe emerging technologies, such as artificial intelligence, and how technology creates new ethical debates

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: None, this course is part of a CIS105 dual enrollment requirement

Unit Name: (2) Looking at Computers: Understanding the Parts (.5 weeks)

- Describe the devices that make up a computer system
- Describe how computers process and store data and how devices connect to a computer system

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: None, this course is part of a CIS105 dual enrollment requirement

Unit Name: (3) Using the Internet: Making the Most of the Web's Resources (1 week)

- Explain how the Internet works and how it is used for collaboration, communication, commerce, and entertainment purpose

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: None, this course is part of a CIS105 dual enrollment requirement

Unit Name: (4) Application Software: Programs That Let You Work and Play (.5 weeks)

- Explain the ways to access and use software and describe how to best manage your software
- Describe the different types of application software used for productivity and multimedia

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: None, this course is part of a CIS105 dual enrollment requirement

Unit Name: (5) System Software: The Operating System, Utility Programs, and File Management (.5 weeks)

- Explain the types and functions of operating systems and explain the steps in the boot process
- Describe how to use system software, including the user interface, file management capabilities, and utility programs

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: None, this course is part of a CIS105 dual enrollment requirement

Unit Name: (6) Understanding and Assessing Hardware: Evaluating Your System (1 week)

- Evaluate your computer system's hardware functioning, including the CPU and memory subsystems.
- Evaluate your computer system's storage subsystem, media subsystem, and reliability and decide whether to purchase a new system or upgrade an existing one

CTSO Integration: (Personal Skills) Integrity, Accepts Responsibility
Professional Skills: Complex Communication 1.D
Academic Standards: ELA.11-12.SL.5
Technical Standard: None, this course is part of a CIS105 dual enrollment requirement

Unit Name: (7) Networking: Connecting Computing Devices (.5 weeks)

- Explain the basics of networking, including the components needed to create a network, and describe the different ways a network can connect to the Internet
- Describe what is necessary to install and configure a home network and how to manage and secure a wireless network

CTSO Integration: (Personal Skills) Integrity, Accepts Responsibility
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)

Unit Name: (8) Managing a Digital Lifestyle: Media and Ethics (.5 weeks)

- Describe the nature of digital signals; how digital technology is used to produce and distribute digital texts, music, and video; and the challenges in managing a digital lifestyle
- Describe how to respect digital property and use it in ways that maintain your digital reputation

CTSO Integration: (Personal Skills) Integrity, Accepts Responsibility
Professional Skills: Complex Communication 1.D
Academic Standards: ELA.11-12.RI.2
Technical Standard: None, this course is part of a CIS105 dual enrollment requirement

Unit Name: (9) Securing Your System: Protecting Your Digital Data and Devices (1 weeks)

- Describe hackers, viruses, and other online annoyances and the threats they pose to your digital security
- Describe various ways to protect your digital property and data from theft and corruption

CTSO Integration: (Personal Skills) Work Ethic, Get It Done
Professional Skills: Collaboration 2.B
Academic Standards: ELA.11-12.RI.2
Technical Standard: None, this course is part of a CIS105 dual enrollment requirement

Unit Name: (10) Behind the Scenes: Software Programming (.5 weeks)

- Describe the life cycle of a software project and identify the stages in the program development life cycle
- Discuss factors programmers consider when selecting an appropriate programming language for a specific problem and will be familiar with some modern programming languages

CTSO Integration: (Personal Skills) Work Ethic, Get It Done
Professional Skills: Collaboration 2.A
Academic Standards: ELA.11-12.RI.2
Technical Standard: None, this course is part of a CIS105 dual enrollment requirement

Unit Name: (11) Behind the Scenes: Databases and Information Systems (.5 weeks)

- Explain the basics of databases, including the most common types of databases and the functions and components of relational databases in particular
- Explain how businesses use data warehouses, data marts, and data mining to manage data and how business information systems and business intelligence are used to make business decisions

CTSO Integration: Air Force Association's CyberPatriot Training Round
Professional Skills: Financial Practices 9.C
Academic Standards: ELA.11-12.RI.2
Technical Standard: None, this course is part of a CIS105 dual enrollment requirement

Unit Name: (12) Behind the Scenes: Networking and Security in the Business World (.5 weeks)

- Describe common types of client/server networks, servers found on them, and network topologies used to construct them
- Describe transmission media, network operating system software, and network navigation devices and explain major threats to network security and how to mitigate them

CTSO Integration: Air Force Association's CyberPatriot Training Round
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)

Unit Name: (13) Behind the Scenes: How the Internet Works (.5 weeks)

- Explain how the Internet is managed and the details of how data is transmitted across the Internet
- Describe the web technologies used to develop web applications

CTSO Integration: Air Force Association's CyberPatriot Training Round
Professional Skills: Complex Communication 1.C
Academic Standards: ELA.11-12.RI.2
Technical Standard: None, this course is part of a CIS105 dual enrollment requirement

IT Essentials v7 (9 Weeks)

Certification: CompTIA A+ (220-1001, 220-1002)

Unit Name: (1) Introduction to Personal Computer Hardware (.5 weeks)

- Select the appropriate computer components to build, repair, or upgrade personal computers.

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: 220-1001 3.0

Unit Name: (2) PC Assembly (1 week)

- Install components to build, repair, or upgrade personal computers

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), 220-1001 3.0, 5.0

Unit Name: (3) Advanced Computer Hardware (.5 weeks)

- Install and configure components to upgrade a computer

CTSO Integration: Air Force Association's CyberPatriot Practice Round
Professional Skills: Professionalism 4.B
Academic Standards: ELA.11-12.RI.2
Technical Standard: 220-1001 3.0, 5.0

Unit Name: (4) Preventive Maintenance and Troubleshooting (.5 weeks)

- Perform Troubleshooting on personal computers.

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), 220-1001 5.0

Unit Name: (5) Networking Concepts (.5 weeks)

- Explain how computers communicate on a network.

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 15.1200.30.1(1.1-1.4), 220-1001 2.0, 5.0

Unit Name: (6) Applied Networking(.5 weeks)

- Configure devices to communicate on a network.

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, 220-1001 2.0, 5.0

Unit Name: (7) Laptops and Other Mobile Devices(.5 weeks)

- Explain how to troubleshoot Laptops and other Mobile Devices

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: 220-1001 1.0

Unit Name: (8) Printers(1 week)

- Install a printer to meet requirements.

CTSO Integration: (Personal Skills) Work Ethic, Get It Done

Professional Skills: Professionalism 4.D

Academic Standards: ELA.11-12.RI.2

Technical Standard: 220-1001 2.0, 3.0

Unit Name: (9) Virtualization and Cloud Computing(.5 weeks)

- Describe virtualization and cloud computing.

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: 220-1001 4.0

Unit Name: (10) Windows Installation(.5 weeks)

- Install Windows operating systems

CTSO Integration: (Personal Skills) Professionalism, Stop, Think and Be Mature

Professional Skills: Collaboration 2.C

Academic Standards: ELA.11-12.RI.2

Technical Standard: 220-1002 1.0, 3.0

Unit Name: (11) Windows Configuration(.5 weeks)

- Perform management and maintenance of Windows operating systems.

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: 220-1002 1.0, 3.0

Unit Name: (12) Mobile, Linux, and OSX Operating Systems(.5 weeks)

- Explain how to configure, secure, and troubleshoot mobile, Mac, and Linux operating systems.

CTSO Integration: (Personal Skills) Professionalism, Stop, Think and Be Mature

Professional Skills: Professionalism 4.A

Academic Standards: ELA.11-12.RI.2

Technical Standard: 220-1002 1.0, 3.0

Unit Name: (13) Security(.5 weeks)

- Implement basic host, data, and network security.

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: 220-1002 2.0

Unit Name: (14) The IT Professional(1 week)

- Explain the roles and responsibilities of the IT Professional.

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: 220-1002 4.0

Year 1- Semester 2

ITS 102 - Network Security II

(16 weeks)

Red Hat System Administration I RH124 (5 Weeks)

Certification: Red Hat Certified Systems Administrator (RHCSA) (EX200)

Unit Name: (1) Introduction(40 Minutes)

- Welcome students and provide an orientation to the class, classroom hardware, and facility or VT environment.

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

Unit Name: (2) Getting Started with Red Hat Enterprise Linux(20 Minutes)

- 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: (3) Accessing the Command Line(70 Minutes)

- 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: (4) Managing Files From the Command Line(140 Minutes)

- 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: (5) Getting Help in Red Hat Enterprise Linux(55 Minutes)

- 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: (6) Creating, Viewing, and Editing Text Files (Started)(50 Minutes)

- 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: (7) Creating, Viewing, and Editing Text Files (Continued)(40 Minutes)

- 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: Air Force Association's CyberPatriot Round 3

Professional Skills: Professionalism 4.E

Academic Standards: ELA.11-12.RI.2

Technical Standard: RHCSA EX200

Unit Name: (8) Managing Local Users and Groups(120 Minutes)

- 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: (9) Controlling Access to Files(90 Minutes)

- 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: (10) Monitoring and Managing Linux Processes(130 Minutes)

- 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: (11) Controlling Services and Daemons(70 Minutes)

- 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: (12) Configuring and Securing SSH(110 Minutes)

- 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: (13) Analyzing and Storing Logs(150 Minutes)

- 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: (14) Managing Networking(125 Minutes)

- 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: (15) Archiving and Transferring Files(115 Minutes)

- 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: (16) Installing and Updating Software Packages(110 Minutes)

- 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: (17) Accessing Linux File Systems(100 Minutes)

- 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: (18) Analyzing Servers and Getting Support(75 Minutes)

- 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: (19) Comprehensive Review(150 Minutes)

- 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) Introduction(40 Minutes)

- Welcome students and provide an orientation to the class, classroom hardware, and facility or VT environment.

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) Improving Command-line Productivity(95 Minutes)

- 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: (3) Scheduling Future Tasks(130 Minutes)

- 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: (4) Tuning System Performance(80 Minutes)

- 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: (5) Controlling Access to Files with ACLs(85 Minutes)

- Describe use cases for ACLs, identify files that have ACLs set, and interpret the effect of those ACLs.
- Set and remove ACLs on files and define default ACLs automatically set by a directory on newly created files.

CTSO Integration: (Personal Skills) Professionalism, I Believe In Me

Professional Skills: Organizational Culture 7.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: (6) Managing Selinux Security(120 Minutes)

- 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(105 Minutes)

- 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) Managing Logical Volumes(130 Minutes)

- Create and manage logical volumes from storage devices, and format them with file systems or prepare them with swap spaces.
- Add and remove storage assigned to volume groups, and nondestructively extend the size of a logical volume formatted with a file system.

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

Unit Name: (9) Implementing Advanced Storage Features(105 Minutes)

- 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: (10) Accessing Network-Attached Storage(105 Minutes)

- 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 **nfscnf** 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: (11) Controlling The Boot Process(150 Minutes)

- 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: (12) Managing Network Security(75 Minutes)

- 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: (13) Installing Red Hat Enterprise Linux(170 Minutes)

- 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: (14) Comprehensive Review(150 Minutes)

- 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 (.5 Week)

- Explain the advances in modern network technologies.

CTSO Integration: Air Force Association's CyberPatriot National Finals Competition

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 (.5 Week)

- 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 (.5 Week)

- 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 (.5 Week)

- 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 (.5 Week)

- 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 (.5 Week)

- 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 (.5 Week)

● 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 (.5 Week)

● 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 (.5 Week)

● 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 (.5 Week)

● 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 (.5 Week)

● 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 (.5 Week)

● 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 (.5 Week)

● 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 (.5 Week)

- 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 (.5 Week)

- 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 (.5 Week)

- 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

Unit Name (17): Build a Small Network (.5 Week)

- 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 201 - Network Security III

(18 weeks)

TestOut Client Pro (6 Weeks)

Certifications: Windows 10 (MD-100), Managing Modern Desktops (MD-101) Passing both exams results in Microsoft 365 Certified: Modern Desktop Administrator Associate, TestOut Client Pro Certification

Unit Name (1): Course Introduction (1 Day)

- Course Introduction, Windows User Interface Overview, File and Folder Management
- 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: MD-100 1.2.4, 2.2.1, 2.2.2, TO 1.2.1, 2.3.3, 2.3.4

Unit Name (2): Windows Installation (.5 Weeks)

- Windows Versions, Installation, Activation, Post -Installation Configuration, Deployment, Web Browser Configuration, Windows Upgrade, User Profile and Data Migration
- 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: MD-100 1.1.1, 1.1.2, 1.1.3, 1.1.4, 1.1.5, 1.1.6, 1.2.1, 1.2.3, 1.2.4, 2.3.1, MD-101 1.2.1, 1.2.2, 1.2.3, 1.2.4, 1.2.5, 1.2.6, 1.3.1, 1.3.2, 1.3.3, 1.3.4, 1.3.5, 4.1.7, TO 1.1.1, 1.1.2

Unit Name (3): System Imaging (.5 Weeks)

●System Images, Image Servicing, Provisioning Packages, Sideloaded Apps

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: MD-100 1.1.2, 1.1.4, MD-101 1.1.1, 1.1.2, 1.1.3, 4.1.5

Unit Name (4): Windows Device and User Management (.5 Weeks)

●Device and User Management, Active Directory

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

Work-based Learning: Guest Speaker (2 hours)

Technical Standard: MD-100 2.1.1, 2.1.3, 2.3.2, 2.3.3, MD-101 1.5.3, TO 2.1.1, 2.1.2, 2.1.5

Unit Name (5): Hardware Management (.5 Weeks)

●Devices and Drivers, Device Driver Troubleshooting, Display Management, OneDrive Storage

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: MD-100 4.1.1, 4.3.3, MD-101 2.4.4, TO 2.3.4, 4.3.1, 4.3.2

Unit Name (6): Network Configuration (.5 Weeks)

●IPv4, IPv6, IP Configuration, IP Troubleshooting, Wireless Networking Overview/Configuration

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: MD-100 3.1.1, 3.1.2, 3.1.4, 3.1.5, TO 3.1.2, 3.1.3, 3.1.4, 3.3.2

Unit Name (7): Application Management (.5 Weeks)

●Desktop Applications, User Account Control (UAC), Windows Store Apps, Cloud-based Apps

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: MD-100 2.4.1, 4.3.3, MD-101 4.1.3, 4.1.4, 4.1.6, TO 2.2.2, 2.2.3

Unit Name (8): System Access (.5 Weeks)

●Authentication and Authorization, Authentication Management, User Rights and Account Policies, Credential Management,

Encryption, Alternative Authentication Options, NTFS Permissions, Auditing, Dynamic Access Control (DAC)

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: ADE Network Security 15.1200.30.3(3.1-3.11), MD-100 1.2.3, 2.1.2, 2.1.3, 2.2.1, 2.4.3, 4.3.1, MD-101 3.1.2, 1.5.2, TO 1.2.3, 2.1.1, 2.1.2, 2.1.3, 2.1.4, 2.1.5, 2.2.1, 2.3.2, 2.3.3, 2.4.2

Unit Name (9): Resource Sharing (.5 Weeks)

●Resource Sharing, Shared Resource Troubleshooting, Printer Management and Sharing

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: MD-100 2.2.1, 2.2.2, TO 2.3.2, 2.3.3, 4.1.1, 4.1.2

Unit Name (10): Mobile Computing (.5 Weeks)

●Co-Management, Mobile Device Management - Intune Enrollment, Mobile Management - Intune, Policies and Profiles, Virtual Private Network (VPN), BitLocker, Mobile Device Security, Power Management, Mobility Options, Mobile Networking/Apps

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: MD-100 1.2.2, 2.4.3, 3.1.2, 3.1.3, 3.1.5, MD-101 1.5.1, 2.1.1, 2.1.2, 2.1.3, 2.2.1, 2.2.2, 2.2.3, 2.2.4, 2.2.5, 2.2.6, 2.3.1, 2.3.2, 2.3.3, 2.4.1, 2.4.2, 3.2.1, 3.2.2, 3.2.3, 3.2.4, 3.2.5, 3.2.6, 3.2.7, 3.3.1, 3.3.2, 4.1.1, 4.1.2, 4.1.8, 4.2.1, 4.2.2, 4.2.3, 4.2.4, 4.2.5, 4.2.6 TO 1.1.3, 1.2.2, 2.3.1, 2.3.2, 2.3.4, 2.4.4, 3.1.1, 3.1.4

Unit Name (11): System Monitoring and Maintenance (.5 Weeks)

●System Configuration Tools, System Events, Performance Management, Resource Monitoring, Reliability and Performance

Maintenance, Windows Optimization, Remote Management, Remote Desktop and Remote Assistance, System Troubleshooting Tools

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: ADE Network Security 15.1200.30.2(2.1-2.7), MD-100 3.2.1, 3.2.2, 3.2.3, 4.1.3, 4.3.1, 4.3.2, 4.3.3, MD-101 3.3.1, 3.3.2, TO 1.2.1, 3.2.1, 3.2.2, 4.4.1, 4.4.2

Unit Name (12): System Protection (.5 Weeks)

●Windows Updates, Advanced Windows Updates, System Restore, Backup, Recovery, Recovery Environment

CTSO Integration: (Workplace Skills) Communication, The Message Is Clear

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: ADE Network Security 15.1200.30.3(3.1-3.11), MD-100 1.1.2, 4.1.1, 4.1.2, 4.1.3, 4.2.1, 4.2.2, 4.2.3, 4.2.4, 4.2.5, MD-101 1.4.1, 1.4.2, 1.4.3, 1.4.4, 1.4.5, TO 4.2.2, 4.2.3, 4.2.4, 4.2.5, 4.3.1

Unit Name (13): Windows Defender (.5 Weeks)

●Malware Protection, Windows Security, Windows Defender Credential Guard, Windows Defender Exploit Guard, Windows Defender Advanced Threat Protection, Windows Defender Application Control, Windows Defender Application Guard, Windows Defender

Firewall, Windows Defender Firewall with Advanced Security

CTSO Integration (Leadership Skills): SkillsUSA State Championships

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), MD-100 2.4.2, MD-101 3.1.1, 3.1.2, 3.1.3, 3.1.4, 3.1.5, 3.1.6, TO 2.4.1, 2.4.2, 2.4.3, 2.4.4, 2.4.5

Switching, Routing, and Wireless Essentials v7 (12 Weeks)

Cisco Certified Network Associate (CCNA) (200-301)

Unit Name (1): Basic Device Configuration (.5 Week)

●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 (.5 Week)

●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 (1 Week)

- 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 (1 Week)

- 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 (1 Week)

- 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 (.5 Week)

- 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 (1 Week)

- 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 (1 Week)

- 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 (.5 Week)

- 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 (.5 Week)

- 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 (.5 Week)

- 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 Concepts (.5 Week)

- 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 (1 Week)

- 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 (.5 Week)

- 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 (1 Week)

- 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 (1 Week)

- 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

Year 2- Semester 2

ITS 202 - Network Security IV

(19 weeks)

Enterprise Networking, Security, and Automation v7 (12 Weeks)

Cisco Certified Network Associate (CCNA) (200-301)

Unit Name (1): Single-Area OSPFv2 Concepts (.5 Week)

- 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 (1 Week)

- 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 (.5 Week)

- 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 (1 Week)

- 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 (1 Week)

- 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 (1 Week)

- 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 (1 Week)

- 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 (1 Week)

- 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 (1 Week)

- 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 (1 Week)

- 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 (1 Week)

- 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 (1 Week)

- 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 (1 Week)

- 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 (1 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

TestOut Security Pro (6 Weeks)

Certification: CompTIA Security+ (SY0-501), TestOut Security Pro Certification

Unit Name (1): Introduction (1 Day)

- Security Overview

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)

Unit Name (2): Security Basics (.5 Week)

● Explain threat actor type/attributes, Explain penetration testing concepts, Compare/contrast cryptography, Summarize basic concepts of forensics

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: SY0-501 1.3, 1.4, 2.2, 3.1, 4.1, 4.4, 5.1, 5.4, 5.5, 6.1, TO 1.3, 1.4, 2.2, 3.1, 4.1, 4.4, 5.1, 5.4, 5.5, 6.1

Unit Name (3): Policies, Procedures & Awareness (.5 Week)

● Explain the importance of policies, plans and procedures related to organizational security, Given a scenario, implement secure systems design

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), SY0-501 1.2, 2.5, 3.3, 3.6, 4.4, 5.1, 5.2, 5.3, 5.6, 5.8, TO 1.2, 2.5, 3.3, 3.6, 4.4, 5.1, 5.2, 5.3, 5.6, 5.8

Unit Name (4): Physical (.5 Week)

● Given a scenario, implement secure network architecture concepts

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: SY0-501 1.2, 2.7, 3.2, 3.9, TO 1.2, 2.7, 3.2, 3.9

Unit Name (5): Perimeter (.5 Week)

● Install and configure network components, both hardware and software-based, to support organizational security

CTSO Integration (Technical Skills) Professional Development, Investing In Yourself

Professional Skills: Collaboration 2.C

Academic Standards: ELA.11-12.RI.2

Technical Standard: SY0-501 1.2, 1.4, 1.6, 2.1, 2.3, 2.4, 3.2, 6.3, TO 1.2, 1.4, 1.6, 2.1, 2.3, 2.4, 3.2, 6.3

Unit Name (6): Network (.5 Week)

● Given a scenario, use appropriate software tools to assess the security posture of an organization, Given a scenario, install and configure identity and access services

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, SY0-501 1.1, 1.2, 1.4, 1.5, 1.6, 2.1, 2.2, 2.6, 3.2, 3.3, 3.7, 4.2, 5.3, TO 1.1, 1.2, 1.4, 1.5, 1.6, 2.1, 2.2, 2.6, 3.2, 3.3, 3.7, 4.2, 5.3

Unit Name (7): Host (1 Week)

● Given a scenario, differentiate common account management practices, Summarize cloud and virtualization concepts

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: SY0-501 1.1, 1.2, 1.4, 1.6, 2.1, 2.2, 2.3, 2.4, 2.5, 3.2, 3.3, 3.5, 3.7, 4.4, 5.1, 6.4, TO 1.1, 1.2, 1.4, 1.6, 2.1, 2.2, 2.3, 2.4, 2.5, 3.2, 3.3, 3.5, 3.7, 4.4, 5.1, 6.4

Unit Name (8): Application (.5 Week)

- Explain the importance of secure staging deployment concepts

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: SY0-501 1.2, 1.6, 2.4, 3.3, 3.4, 3.6, 3.9, 4.1, 4.3, 4.4. TO 1.2, 1.6, 2.4, 3.3, 3.4, 3.6, 3.9, 4.1, 4.3, 4.4

Unit Name (9): Data (2 Weeks)

- Given a scenario, carry out data security and privacy practices

Compare and contrast basic concepts of cryptography

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: SY0-501 1.2, 2.1, 2.2, 2.3, 2.4, 2.6, 3.3, 3.7, 3.8, 5.1, 5.2, 5.6, 5.8, 6.1, 6.2, 6.4, TO 1.2, 2.1, 2.2, 2.3, 2.4, 2.6, 3.3, 3.7, 3.8, 5.1, 5.2, 5.6, 5.8, 6.1, 6.2, 6.4

**ADE Technical Skills Assessment (TSA)
Network Security 15.1200.3**

Common AZCCR Math Standards (CAMS)

English Language Arts Standards (ELAS)