Florida Department of Education
Curriculum Framework

Program Title: **Enterprise Desktop and Mobile Support Technology**
Program Type: **Career Preparatory**
Career Cluster: **Information Technology**

Career Certificate Program		
Program Number	Y300600	
CIP Number	0511100124	
Grade Level	30, 31	
Program Length	1050 hours	
Teacher Certification	Refer to the **Program Structure** section.	
CTSO	SkillsUSA, PBL, BPA	
SOC Codes (all applicable)	For program SOC codes, please see the Program and Course Tables section of the CTE Program Resources page linked below.	
CTE Program Resources	http://www.fldoe.org/academics/career-adult-edu/career-tech-edu/program-resources.stml	
Basic Skills Level	Computation (Mathematics): 10	Communications (Reading and Language Arts): 10

Purpose

The purpose of this program is to prepare students for employment or advanced training in a variety of occupations in the information technology industry.

This program focuses on broad, transferable skills and stresses understanding and demonstration of the following elements of the information technology industry; technical and product skills, underlying principles of technology, planning, management, finance, labor issues, community issues and health, safety, and environmental issues.

The content includes but is not limited to communication, leadership skills, human relations and employability skills; and safe, efficient work practices.

Additional Information relevant to this Career and Technical Education (CTE) program is provided at the end of this document.

Program Structure

This program is a planned sequence of instruction consisting of four occupational completion points. When the recommended sequence is followed, the structure is intended to prepare students to complete the CompTIA A+ and Network+ industry certifications. A student who completes the applicable competencies at any occupational completion point may either continue with the training or become an occupational completer.

This program is comprised of courses which have been assigned course numbers in the SCNS (Statewide Course Numbering System) in accordance with Section 1007.24 (1), F.S. Career and Technical credit shall be awarded to the student on a transcript in accordance with Section 1001.44(3)(b), F.S.

To teach the courses listed below, instructors must hold at least one of the teacher certifications indicated for that course.

The following table illustrates the postsecondary program structure:

OCP	Course Number	Course Title	Teacher Certification	Length
A	CTS0000	Computer Hardware Fundamentals	BUS ED 1 @2 COMPU SCI 6 COMP SVC 7G INFO TECH 7 G CYBER TECH 7 G ELECTRONIC @7 7 G	150 hours
	CTS0001	Operating System Fundamentals		150 hours
B	CTS0002	Advanced Operating Systems		150 hours
	CTS0003	Mobile-Security-Domain Environment Fundamentals		150 hours
C	CTS0005	Desktop Support Technician		150 hours
D	CTS0020	Network Fundamentals		150 hours
	CTS0033	Network Technician		150 hours

Florida's Career Readiness Skills for CTE Programs

Employability Skills	
01.0	Apply academic skills to workplace scenarios.
01.01	Use reading skills.
01.02	Use writing skills.
01.03	Use mathematical strategies and procedures.
01.04	Use scientific principles and procedures.
02.0	Design a solution to an industry problem.
02.01	Use critical thinking.
02.02	Use creativity.
02.03	Make sound decisions.
02.04	Solve problems.
02.05	Reason.
02.06	Plan and organize.
03.0	Manage resources within an industry project
03.01	Manage time.
03.02	Manage money or resources.
03.03	Manage materials.
03.04	Manage personnel.
04.0	Oversee the subcomponents, operations and output of a technical or organizational system.
04.01	Manage systems.
04.02	Monitor systems.
04.03	Improve systems.
05.0	Use information for decision making.
05.01	Locate information.
05.02	Organize information.
05.03	Use information.

	05.04 Analyze information.
	05.05 Communicate information.
06.0	Apply relevant technology to workplace scenarios to aid productivity.
	06.01 Use technology.
07.0	Interpret and express interpersonal communication.
	07.01 Communicate verbally.
	07.02 Listen actively.
	07.03 Comprehend written material.
	07.04 Convey information in writing.
	07.05 Communicate nonverbally.
	07.06 Interpret nonverbal communication.
08.0	Interact with others to accomplish workplace goals.
	08.01 Collaborate with others in a team.
	08.02 Respond to customer needs.
	08.03 Exercise leadership.
	08.04 Negotiate to resolve conflict.
	08.05 Respect others.
09.0	Manage personal behavior to maximize productivity and professional growth.
	09.01 Demonstrate responsibility and self-discipline.
	09.02 Adapt and show flexibility.
	09.03 Work independently.
	09.04 Demonstrate a willingness to learn.
	09.05 Demonstrate integrity.
	09.06 Demonstrate professionalism.
	09.07 Take initiative.
	09.08 Display positive attitude.
	09.09 Take responsibility for professional growth.

Job Attainment	
10.0	Find, assess and apply to job opportunities.
10.01	Identify online job posts relevant to his or her career aspirations.
10.02	Compare and contrast the job posts' required qualifications, job duties, compensation, benefits and employers.
10.03	Define what information, documentation and writing prompts are required for the positions.
11.0	Communicate personal competence, character and fit for a job opportunity.
11.01	Develop a resume.
11.02	Write a cover letter.
11.03	Curate a professional portfolio that includes work products.
11.04	Prepare for and experience a mock job interview.
12.0	Cultivate and leverage relationships to professionally advance.
12.01	Request a signed reference letter, letter of recommendation and/or an online skill/professionalism endorsement.
12.02	Develop a plan to cultivate a professional digital footprint.
12.03	Develop a networking plan for a specific industry of interest.

Standards

After successfully completing this program, the student will be able to perform the following:

01.0 Identify characteristics of medium size enterprise information systems as a business unit and its critical role and purpose in successful and efficient business operation.
02.0 Demonstrate proficiency using enterprise-class computer/devices connectors, jacks, plugs, cables and their function, versions and purpose.
03.0 Demonstrate proficiency with motherboards, CPU options, system components, BIOS types and BIOS-UEFI configurations options.
04.0 Demonstrate proficiency with tools, ESD concepts-procedures, personal and equipment safety and chemicals related to maintenance and repair of computers, mobile devices, peripherals, printers and network devices.
05.0 Demonstrate an understanding of storage, video, audio, display, and network-cellular found in the business/enterprise.
06.0 Demonstrate proficiency in building a basic PC system using standard components, following best practices in equipment and personal safety, following manufactures' procedures and steps for every component involved in the system.
07.0 Demonstrate proficiency with installation and configuration of enterprise desktop-laptop operating systems.
08.0 Demonstrate proficiency installing and configuring expansion cards, RAM, storage devices, video adapters, audio, and a variety of system components.
09.0 Demonstrate proficiency in installing, updating and troubleshooting drivers in desktop-laptop-tablet devices.
10.0 Demonstrate proficiency with PC Laptop specification for purchase–Laptop systems for a variety of corporate functions such as, basic desktop user, CAD, CAE, video-audio editing and client-side virtualization.
11.0 Demonstrate the importance of health, safety, and environmental procedures in organizations and their importance to organizational and personal performance and regulatory compliance.
12.0 Demonstrate proficiency in connecting, configuring and troubleshooting multi-displays, data projectors, smart boards, and document cameras and kiosks systems.
13.0 Demonstrate proficiency of installing, configuring and troubleshooting enterprise desktop-laptop operating systems in a network environment.
14.0 Demonstrate proficiency of installing and configuring and troubleshooting variety of business applications in a network environment.
15.0 Demonstrate proficiency in configuring and troubleshooting basic desktop, laptop network connectivity, including software, services, cables, switches, and access points.
16.0 Understanding the fundamentals of active directory domains, organization units, the role of computers and users in that environment and how the technician interacts with this secure environment.
17.0 Describe the roles within teams, work units, departments, organizations, inter-organizational systems, and the larger environment.
18.0 Describe the importance of professional ethics and legal responsibilities.
19.0 Explain and demonstrate the basic features of mobile operating systems.
20.0 Establish mobile network connectivity and configure email, and applications and configure application synchronization.
21.0 Configure, compare and contrast methods for mobile security and hardware platforms.
22.0 Identify and enterprise attack vectors, remove malware, viruses, and other security risk software from desktops, laptop, and mobile devices.
23.0 Demonstrate proficiency identifying, and mitigating malicious threats using social and human elements in the workplace.
24.0 Demonstrate leadership and teamwork skills needed to accomplish team goals and objectives.
25.0 Identify and compare and contrast business type printers.
26.0 Install, configure and troubleshooting directly connected printers and share to the local network.

27.0 Install, configure and troubleshooting server-based printers and validate the clients printing functionality.
28.0 Demonstrate command-line fundamentals, including hard drive navigation, network tools, basic scripts and the fundamentals of PowerShell.
29.0 Demonstrate proficiency in share permissions and file and folder security including fundamentals of domain users, local users, groups in an active directory environment.
30.0 Demonstrate the fundamentals of network architectural structure of LANs, fundamentals and roles of the network switch, router and WAN.
31.0 Demonstrate proficiency in tools and equipment for troubleshooting network connectivity.
32.0 Demonstrate the use of network services including DNS, DHPC, cellular, cloud services and applications.
33.0 Demonstrate the fundamentals TCP/IP, OSI and Internet models of network layer addressing.
34.0 Setup and configure basic VoIP telephony functionality for business users.
35.0 Setup and configure VPN on desktop, tablet, and laptop platforms.
36.0 Demonstrate proficiency installing, configuring, and troubleshooting management system agents, anti-virus, group policy objects, operating systems and applications updates.
37.0 Demonstrate proficiency in installing, configuring and troubleshooting client-side virtualization.
38.0 Demonstrate proficiency with different operating systems.
39.0 Demonstrate proficiency of user data backup, configuration, and recovery.
40.0 Demonstrate troubleshooting of PC and laptop hardware failures.
41.0 Demonstrate troubleshooting of PC-laptop boot failures, BSOD, shutdown, devices failing to start, missing DLL message.
42.0 Describe the operation of data networks.
43.0 Differentiate between various network media and topologies.
44.0 Identify, install, and configure basic network devices.
45.0 Implement an IP addressing scheme to meet network requirements.
46.0 Demonstrate use of network management tasks and methodologies.
47.0 Demonstrate proficiency using basic network tools.
48.0 Demonstrate an understanding of network security threats and mitigation techniques.
49.0 Configure, verify and troubleshoot a switch with VLANs and interswitch communications.
50.0 Implement an IP addressing scheme and IP Services to meet network requirements in a medium-size Enterprise branch office network.
51.0 Understand basic router operation.
52.0 Demonstrate Proficiency with configuring and troubleshooting a WLAN.
53.0 Demonstrate Proficiency with configuring and troubleshooting a Server.
54.0 Demonstrate Proficiency with configuring and troubleshooting a VPN.
55.0 Demonstrate Proficiency with configuring and troubleshooting a VOIP.
56.0 Demonstrate Proficiency with configuring and troubleshooting Virtualization.

Florida Department of Education
Student Performance Standards

Program Title: Enterprise Desktop and Mobile Support Technology
Career Certificate Program Number: Y300600

Course Number: CTS0000 **Occupational Completion Point: A** **Computer Hardware Fundamentals – 150 Hours**	
01.0	Identify characteristics of medium size enterprise information systems as a business unit and its critical role and purpose in successful and efficient business operation. The student will be able to:
01.01	Identify business unit structures (operations, accounting) in most medium and large enterprise.
01.02	Describe the relationship between enterprise business units and IT unit.
01.03	Summarize various career options within the IT enterprise (Help Desk, Tier 1, Tier 2, Server Administrator).
01.04	Analyze and report on IT budgets, project management, IT services, and IT innovation.
01.05	Evaluate and justify the role and importance of IT within medium and large enterprise companies.
02.0	Demonstrate proficiency using enterprise-class computer/devices connectors, jacks, plugs, cables and their function, versions and purpose. The student will be able to:
02.01	Identify legacy and current technology connectors, jacks and cables for PCs, tablets, laptops and smart phones.
02.02	Determine function and identify versions of connectors, jacks and plugs on enterprise type motherboards, laptops, tablets and smart phones.
03.0	Demonstrate proficiency with motherboards, CPU options, system components, BIOS types and BIOS-UEFI configurations options. The student will be able to:
03.01	Classify motherboard form factors, motherboard components, types and features.
03.02	Classify internal power supplies types, characteristics and connectors.
03.03	Explain the purpose CPUs, characteristics and features.
03.04	Compare and contrast CPU cooling technology for components and devices.
03.05	Compare and contrast memory types, characteristics and purpose.
03.06	Identify and explain the functions of internal storage technologies.
03.07	Compare features of BIOS vs UEFI as related to advanced functionality and security.
03.08	Identify and explain the importance of TPM and hardware-based security in enterprise devices.
03.09	Demonstrate firmware upgrades, device tracking configuration, and password protection of devices.
04.0	Demonstrate proficiency with tools, ESD concepts-procedures, personal and equipment safety and chemicals related to maintenance and

	repair of computers, mobile devices, peripherals, printers and network devices. The student will be able to:
	04.01 Given a scenario use the appropriate tools in the repair and maintenance of desktops.
	04.02 Demonstrate personal safety procedures during the repair of electronic equipment, proper battery handling and storage.
	04.03 Demonstrate use of ESD protection including: wrist straps, ESD mats, self-grounding, and equipment grounding.
	04.04 Describe chemical SDS forms, demonstrate how to implement safety procedures, and demonstrate steps emergency aid in the event of mistakes in the use of the chemical.
	04.05 Identify tools and appropriate use of tools in the repair of mobile devices, peripherals, printers and network devices.
05.0	Demonstrate an understanding of storage, video, audio, display, and network-cellular found in the business/enterprise. The student will be able to:
	05.01 Identify and explain the purpose of storage types, technologies and proper implementation of storage types and technology in the support of enterprise users. SATA, SATA express, SAS, SCSI, NVMe, SSD Hard Drive, Hybrid Hard Drives, Spindle-based Hard Drives, Flash-based storage, SD, RAID technologies, Cloud-based storage options, Optical based storage.
	05.02 Identify common video display technologies describe use/implementation in enterprise.
	05.03 Identify common audio technologies and describe the use/implementation in enterprise.
	05.04 Identify common display technologies describe the use/implementation in enterprise. Multi-displays, LCD, LED, OLED.
	05.05 Identify common network-cellular technologies and describe the use/implementation in enterprise. WiFi 802.11x, Wired Ethernet, Cellular technologies, Bluetooth, RFID, NFC.
06.0	Demonstrate proficiency in building a basic PC system using standard components, following best practices in equipment and personal safety, following manufactures' procedures and steps for every component involved in the system. The student will be able to:
	06.01 Demonstrate the ability to read and understand OEM technical documentation, manuals, diagrams and procedures.
	06.02 Demonstrate proper handling and installation of CPU, motherboard, adapters, and power supplies in the PC enclosure/case.
	06.03 Demonstrate understanding of thermal monitoring, stress testing of components, and benchmarks for performance.
	06.04 Demonstrate installation of a basic operating system on a storage device.
Course Number: CTS0001 Occupational Completion Point: A Operating System Fundamentals – 150 Hours	
07.0	Demonstrate proficiency with installation and configuration of enterprise desktop-laptop operating systems. The student will be able to:
	07.01 Demonstrate the technology and procedures for network-based, flash drive, and image-based operating system installs.
	07.02 Demonstrate the creation and use of answer-file based operating systems installs using either network file shares or flash drives.
	07.03 Demonstrate installation of operating systems using sysprep, cloning software and basic scripts to do basic configurations.
08.0	Demonstrate proficiency installing and configuring expansion cards, RAM, storage devices, video adapters, audio, and a variety of system

	components. The student will be able to:
	08.01 Demonstrate proper procedures while following OEM documentation on the installation of variety of expansion cards.
	08.02 Demonstrate proper procedures while following OEM documentation when upgrading RAM.
	08.03 Demonstrate proper procedures while following OEM documentation when upgrading and configuring a variety of storage devices and storage configurations.
	08.04 Compare and contrast RAID scenarios used by enterprise for specialty functions (video editing, CAD, CAE).
	08.05 Demonstrate proper procedures while following OEM documentation when upgrading and configuring a variety of video adapters.
09.0	Demonstrate proficiency in installing, updating and troubleshooting drivers in desktop-laptop-tablet devices. The student will be able to:
	09.01 Explain the purpose and function of signed drivers, compare generic drivers with OEM drivers and properly choose the correct one given any scenario.
	09.02 Demonstrate proficiency with installing configuring, troubleshooting and updating device drivers in desktops, laptops, and other mobile devices.
10.0	Demonstrate proficiency with PC Laptop specification for purchase–Laptop systems for a variety of corporate functions such as, basic desktop user, CAD, CAE, video-audio editing and client-side virtualization. The student will be able to:
	10.01 Properly select display adapters, CPU, storage needs, audio functionally, and motherboard for CAD and CAE workstations and laptops.
	10.02 Properly select display adapters, CPU, storage needs, audio functionally, and motherboard for video-audio editing workstations and laptops.
	10.03 Properly select display adapters, CPU, storage needs, audio functionally, and motherboard for client-side virtualization workstations and laptops.
11.0	Demonstrate the importance of health, safety, and environmental procedures in organizations and their importance to organizational and personal performance and regulatory compliance. The student will be able to:
	11.01 Demonstrate knowledge of the business procedures and processes for appropriate personal and equipment safety within the workspace.
	11.02 De-energizing equipment, tag-out procedures, lifting techniques, weight limitations, electrical fire safety, removal of personal jewelry.
	11.03 Demonstrate knowledge of business and security procedures for disposal of any storage device with corporate or personal data on it.
	11.04 Demonstrate knowledge of procedures for disposal of any electronic device, batteries, chemicals that meet local, state and federal compliance regulations.
12.0	Demonstrate proficiency in connecting, configuring and troubleshooting multi-displays, data projectors, smart boards, and document cameras and kiosks systems. The student will be able to:
	12.01 Demonstrate proper procedures and steps, following OEM documentation, while connecting, configuring and troubleshooting multi-display systems.
	12.02 Demonstrate proper procedures and steps, following OEM documentation, while connecting, configuring and troubleshooting data-projector systems.
	12.03 Demonstrate proper procedures and steps, following OEM documentation, while connecting, configuring and troubleshooting smart boards systems.

12.04	Demonstrate proper procedures and steps, following OEM documentation, while connecting, configuring and troubleshooting kiosk systems.
12.05	Demonstrate proper procedures and steps, following OEM documentation, while connecting, configuring and troubleshooting document camera systems.
Course Number: CTS0002 Occupational Completion Point: B Advanced Operating Systems – 150 Hours	
13.0	Demonstrate proficiency of installing, configuring and troubleshooting enterprise desktop-laptop operating systems in a network environment. The student will be able to:
13.01	Describe the configuration and setup of network-based operating systems installation, flash drive installation and imaging.
13.02	Demonstrate the installation of an operating system using answer files, sysprep, clone tools and basic scripts for configuration.
13.03	Demonstrate understanding of users and groups configurations, management agents, and user's rights for enterprise desktops and laptops.
13.04	Demonstrate built-in operating system utilities for configuring and managing services, devices, performance, and disks.
13.05	Demonstrate built-in operating system utilities for configuring and managing scheduled tasks.
13.06	Demonstrate built-in operating system utilities user configuration, registry modification, user migration, system configuration and local security policies.
13.07	Employ built-in operating system administrative utilities for configuration and troubleshooting.
13.08	Explain operating system processes, threads, DLLs, security, and parent child relationships within the operating system.
13.09	Troubleshoot locked processes, processes that demand excessive resources, and processes that may need updates or developer intervention.
13.10	Remotely troubleshoot operating systems using RDC, built-in utilities, and web-based remote access tools.
13.11	Demonstrate the bare-metal backup and recovery on an operating system.
14.0	Demonstrate proficiency of installing and configuring and troubleshooting variety of business applications in a network environment. The student will be able to:
14.01	Demonstrate the proper installation of typical user applications.
14.02	Demonstrate basic scripting during the installation of typical applications.
14.03	Demonstrate troubleshooting steps and procedures for typical business applications, including desktop apps, modern apps, and cloud-based applications.
14.04	Compare and explain the differences and similarities of desktop applications, modern applications and cloud-based applications.
15.0	Demonstrate proficiency in configuring and troubleshooting basic desktop, laptop network connectivity, including software, services, cables, switches, and access points. The student will be able to:
15.01	Describe the characteristics and identify various network cables and connectors used in the enterprise.

	15.02 Compare wireless standards and configurations needed for accessing APs.
	15.03 Describe the fundamentals of an Ethernet based LAN, the role of switches in user connectivity to the LAN.
	15.04 Identify fundamental services and key components for networking in the operating system.
	15.05 Explain static and dynamic IP addressing, and fundamentals of network connectivity between switches and NICs, wireless NICs and access points.
	15.06 Configure and troubleshoot basic network connectivity for both desktops and laptops to wired and wireless network connection.
16.0	Understanding the fundamentals of active directory domains, organization units, the role of computers and users in that environment and how the technician interacts with this secure environment. The student will be able to:
	16.01 Explain the fundamental structure, purpose and function of active directory.
	16.02 Explain the purpose and relationship of domain users and groups and computer membership in a domain environment.
	16.03 Join computers to a domain, add domain users to local groups and explain the impact on the operating system and user rights.
	16.04 Given a user, business need, and security requirement show how GPOs impact the function of the operating system.
	16.05 Given a scenario apply a GPO to users and computers that effectively meets the criteria of the scenario.
17.0	Describe the roles within teams, work units, departments, organizations, inter-organizational systems, and the larger environment. The student will be able to:
	17.01 Describe the nature and types of business organizations.
	17.02 Explain the effect of key organizational systems on performance and quality.
	17.03 List and describe quality control systems and/or practices common to the workplace.
	17.04 Explain the impact of the global economy on business organizations.
18.0	Describe the importance of professional ethics and legal responsibilities. The student will be able to:
	18.01 Evaluate and justify decisions based on ethical reasoning.
	18.02 Evaluate alternative responses to workplace situations based on personal, professional, ethical, legal responsibilities, and employer policies.
	18.03 Identify and explain personal and long-term consequences of unethical or illegal behaviors in the workplace.
	18.04 Interpret and explain written organizational policies and procedures.
Course Number: CTS0003 Occupational Completion Point: B Mobile-Security-Domain Environment Fundamentals – 150 Hours	
19.0	Explain and demonstrate the basic features of mobile operating systems. The student will be able to:
	19.01 Compare and contrast the significant mobile operating systems as open source vs vendor specific, its impact on applications

		sources, it fundamental operations and interface.
	19.02	Explain the various enterprise BYOD policies found in the local area, their impact on the user and security policies of company data.
	19.03	Demonstrate the ability to navigate and locate administration functionality on different hardware platforms and different operating systems.
20.0		Establish mobile network connectivity and configure email, and applications and configure application synchronization. The student will be able to:
	20.01	Configure fundamental settings for a user from a default state on a mobile operating system.
	20.02	Add, configure and troubleshoot mobile applications.
	20.03	Enable, configure and troubleshoot Bluetooth, NFC, wireless and cellular networks.
	20.04	Configure synchronization with email systems and other critical business type applications and cloud-based providers.
	20.05	Configure VPN for mobile devices.
21.0		Configure, compare and contrast methods for mobile security and hardware platforms. The student will be able to:
	21.01	Compare and contrast security methods for different operating systems and hardware.
	21.02	Compare and contrast security methods for Passcode locks.
	21.03	Compare and contrast security methods for Log on security methods.
	21.04	Compare and contrast security methods for Remote wipes.
	21.05	Compare and contrast security methods for Locator applications.
	21.06	Compare and contrast security methods for Patching/OS updates.
	21.07	Configure various types of user and device security on mobile operating systems.
22.0		Identify and enterprise attack vectors, remove malware, viruses, and other security risk software from desktops, laptop, and mobile devices. The student will be able to:
	22.01	Compare contrast common security threats.
	22.02	Explain the use of malware, rootkits, phishing, shoulder surfing, spyware, app vulnerability.
	22.03	Install and configure anti-virus and anti-malware software.
	22.04	Implement security best practices.
	22.05	Demonstrate setting strong passwords, changing default user names/passwords, disabling unused users, restricting user rights.
	22.06	Demonstrate safe storage device sanitation: wipe, physical destruction, out-source for recycle and sanitation.
	22.07	Establish and configure strong wireless security standards.
	22.08	Using third party tools both installed and offline, detect malicious code and remove such code, using proper procedures for protecting user data.

23.0	Demonstrate proficiency identifying, and mitigating malicious threats using social and human elements in the workplace. The student will be able to:
	23.01 Identify and implement physical security prevention methods.
	23.02 Explain access control, physical document securing, tailgating, biometrics, badges, key fobs, privacy filters and retinal identification.
	23.03 Explain the importance of “principle of least privilege” and “user education” in the overall company security policy.
	23.04 Identify the “human” element within each company and the principles behind social engineered attacks.
	23.05 Assess digital security.
	23.06 Setup firewall, anti-virus, network access policies, user authentication, directory permissions.
	23.07 Given a social engineered attack scenario, use proper procedures to identify the threat and mitigate the threat.
24.0	Demonstrate leadership and teamwork skills needed to accomplish team goals and objectives. The student will be able to:
	24.01 Employ leadership skills to accomplish organizational goals and objectives.
	24.02 Establish and maintain effective working relationships with others in order to accomplish objectives and tasks.
	24.03 Conduct and participate in meetings to accomplish work tasks.
	24.04 Employ mentoring skills to inspire and teach others.
25.0	Identify and compare and contrast business type printers. The student will be able to:
	25.01 Explain the principles of the xerographic process used by all laser and copy devices.
	25.02 Compare and contrast the impact, thermal, and inkjet printer technologies.
	25.03 Compare and contrast types of paper used by a variety of business type printers.
26.0	Install, configure and troubleshooting directly connected printers and share to the local network. The student will be able to:
	26.01 Install, configure and troubleshoot typical MFP printers to a local host.
	26.02 Demonstrate setup for printing, fax, copy and scan.
	26.03 Install and configure a printer via, wireless, and connect mobile apps for control of printer/scanner functions.
	26.04 Perform basic printer maintenance.
	26.05 Share and secure hosted printers and troubleshoot printer and network connectivity issues.
27.0	Install, configure and troubleshooting server-based printers and validate the clients printing functionality. The student will be able to:
	27.01 Install, configure and troubleshoot server-hosted printer.
	27.02 Configure basic printer security and policies and user access.
	27.03 Connect and configure and test client access and functionality to printer.

Course Number: CTS0005 **Occupational Completion Point: C** **Desktop Support Technician – 150 Hours**	
28.0	Demonstrate command-line fundamentals, including hard drive navigation, network tools, basic scripts and the fundamentals of PowerShell. The student will be able to:
	28.01 Demonstrate hard drive and directory navigation with command-line and PowerShell.
	28.02 Demonstrate basic utilities for managing files, folders, operating system and network using command-line or PowerShell interfaces.
	28.03 Setup logon and logoff scripts and basic use of various types of scripts to manage desktops.
29.0	Demonstrate proficiency in share permissions and file and folder security including fundamentals of domain users, local users, groups in an active directory environment. The student will be able to:
	29.01 Demonstrate the fundamentals of shares and share permissions, file and folder security and the interaction between the two.
	29.02 Demonstrate the fundamentals of users and groups in their role of share permissions and file and folder security.
	29.03 Given a scenario, properly configure and set share, file and folder security for users and group combinations.
30.0	Demonstrate the fundamentals of network architectural structure of LANs, fundamentals and roles of the network switch, router and WAN. The student will be able to:
	30.01 Explain the basic structure of extended star Ethernet LANs, identify the MDF and IDF roles.
	30.02 Explain the ISP/WAN connectivity, devices and basic security structure.
	30.03 State the role of the router.
	30.04 State the role of switches, VLANs, PoE and switch interconnection in a basic LAN.
	30.05 Explain the fundamentals network devices and their functions.
	30.06 Define NAS, Bridge, Modem, router, firewall.
31.0	Demonstrate proficiency in tools and equipment for troubleshooting network connectivity. The student will be able to:
	31.01 Use a variety of tools for network cables and connectors and punch downs.
	31.02 Use cable tone and probe tools.
	31.03 Use loopback adapters for troubleshooting and various network adapters for cable crossovers.
32.0	Demonstrate the use of network services including DNS, DHPC, cellular, cloud services and applications. The student will be able to:
	32.01 Explain fundamental LAN network services: DNS, DHCP, and WINS.
	32.02 Explain the fundamentals of cellular systems and their role in network and application connectivity.
	32.03 Explain the fundamentals of cloud services and applications.

33.0	Demonstrate the fundamentals TCP/IP, OSI and Internet models of network layer addressing. The student will be able to:
	33.01 Explain the fundamentals of the OSI and Internet models.
	33.02 Explain and understand IPv4 classic addressing schemes and IPv6.
	33.03 Explain the purpose of common TCP and UDP ports, protocols.
	33.04 Explain the fundamentals of desktop-mobile use of TCP/IP configurations.
34.0	Setup and configure basic VoIP telephony functionality for business users. The student will be able to:
	34.01 Explain the fundamentals of telephony and transition of that technology to VoIP.
	34.02 List and describe the major components of user setup, basic configuration using VoIP.
	34.03 Successfully configure a basic VoIP user, test the circuit for functionality.
35.0	Setup and configure VPN on desktop, tablet, and laptop platforms. The student will be able to:
	35.01 Explain and compare the different technology and security used by VPN in the enterprise.
	35.02 Configure and test a VPN client on a desktop, tablet or laptop.
	35.03 Configure and test a public cloud-based VPN system.
36.0	Demonstrate proficiency installing, configuring, and troubleshooting management system agents, anti-virus, group policy objects, operating systems and applications updates. The student will be able to:
	36.01 Explain the purpose enterprise management systems, both local and cloud-based.
	36.02 Explain enterprise anti-malware systems and the agents critical to their success.
	36.03 Explain the purpose of domain GPOs in the overall strategy for policy and security of the network.
	36.04 Explain the control of application and operating system updates.
	36.05 Demonstrate installing configuring and troubleshooting management agents, anti-malware, GPOs, and updates.
37.0	Demonstrate proficiency in installing, configuring and troubleshooting client-side virtualization. The student will be able to:
	37.01 Identify hardware and software requirements for client-side virtualization.
	37.02 Install type 1 and type 2 hypervisors on desktop operating systems.
	37.03 Install, configure, and troubleshoot guest operating systems.
38.0	Demonstrate proficiency with different operating systems. The student will be able to:
	38.01 Compare and contrast Windows, Linux and the MAC OS.
	38.02 Explain the use and purpose of different operating systems within an enterprise.
	38.03 Identify the certifications and skills needed to support different operating systems.

	38.04 Compare the technical support challenges of different operating systems within a company.
39.0	Demonstrate proficiency of user data backup, configuration, and recovery. The student will be able to:
	39.01 Explain the fundamentals of user profiles and user data redirection.
	39.02 Properly migrate a user's data and settings from one platform to another.
	39.03 Troubleshoot user profiles issues.
	39.04 Demonstrate user data recovery and backup.
40.0	Demonstrate troubleshooting of PC and laptop hardware failures. The student will be able to:
	40.01 Troubleshoot a variety of hardware failures.
	40.02 Troubleshoot hard drive, RAID issues, cable connections, adapter, overheating, and power supply and motherboard and monitor.
41.0	Demonstrate troubleshooting of PC-laptop boot failures, BSOD, shutdown, devices failing to start, missing DLL message. The student will be able to:
	41.01 Troubleshoot a variety of boot and shutdown failures.
	41.02 Troubleshoot BSOD, operating system errors message, device and services failing to start, missing DLLs.
Course Number: CTS0020 Occupational Completion Point: D Networking Fundamentals– 150 Hours	
42.0	Describe the operation of data networks. The student will be able to:
	42.01 Explain the function of common networking protocols.
	42.02 Identify commonly used TCP and UDP default ports.
	42.03 Identify address formats- IPv4, IPv6, MAC address.
	42.04 Explain the function of each layer of the OSI model.
	42.05 Identify the proper use of addressing technologies and addressing schemes.
	42.06 Identify common routing protocols.
	42.07 Explain the purpose and properties of routing.
	42.08 Compare the characteristics of wireless communication standards.
	42.09 Interpret network diagrams.
43.0	Differentiate between various network media and topologies. The student will be able to:
	43.01 Categorize standard cable types and their properties.

	43.02 Identify common connector types.
	43.03 Identify common physical network topologies.
	43.04 Differentiate and implement appropriate wiring standards.
	43.05 Select the appropriate media, cables, ports, and connectors to connect network devices.
	43.06 Categorize WAN technology types and properties.
	43.07 Categorize LAN technology types and properties.
	43.08 Explain common logical network topologies and their characteristics.
	43.09 Install components of wiring distribution.
	43.10 Build appropriate cables.
	43.11 Troubleshoot common network cabling issues.
44.0	Identify, install, and configure basic network devices. The student will be able to:
	44.01 Install, configure and differentiate between common network devices.
	44.02 Identify the functions of specialized network devices.
	44.03 Explain the advanced features of a switch.
	44.04 Implement a small switched network.
	44.05 Verify network status and operation using basic utilities.
45.0	Implement an IP addressing scheme to meet network requirements. The student will be able to:
	45.01 Assign and verify valid IP addresses in a LAN environment.
	45.02 Describe Network Address Translation (NAT) and its importance in network communication.
	45.03 Distinguish between public and private IP addresses.
	45.04 Configure, verify, and troubleshoot DHCP and DNS operation.
	45.05 Implement static and dynamic IP addressing.
	45.06 Troubleshoot IP addressing issues.
46.0	Demonstrate use of network management tasks and methodologies. The student will be able to:
	46.01 Explain network segmentation and traffic management concepts.
	46.02 Conduct network monitoring to identify performance and connectivity issues.
	46.03 Implement network troubleshooting methodologies.

	46.04 Troubleshoot common connectivity issues and select an appropriate solution.
47.0	Demonstrate proficiency using basic network tools. The student will be able to:
	47.01 Select the appropriate command line interface tool and interpret the output to verify functionality.
	47.02 Explain the purpose of network scanners.
	47.03 Utilize the appropriate hardware tools.
48.0	Demonstrate an understanding of network security threats and mitigation techniques. The student will be able to:
	48.01 Explain the function of hardware and software security devices.
	48.02 Explain common features of a firewall.
	48.03 Explain the methods of network access security.
	48.04 Explain methods of user authentication.
	48.05 Explain issues that affect device security.
	48.06 Implement password and physical security in a small routed network.
	48.07 Identify common security threats and mitigation techniques.
Course Number: CTS0026 Occupational Completion Point: D Network Technician – 150 Hours	
49.0	Configure, verify and troubleshoot a switch with VLANs and interswitch communications. The student will be able to:
	49.01 Select the appropriate media, cables, ports, and connectors to connect switches to other network devices and hosts.
	49.02 Explain the technology and media access control method for Ethernet networks.
	49.03 Explain basic switching concepts and the operation of managed switches.
	49.04 Perform and verify switch configuration tasks.
	49.05 Verify network status and switch operation using basic utilities.
	49.06 Describe enhanced switching technologies.
	49.07 Describe how VLANs create logically separate networks and the need for routing between them.
	49.08 Configure, verify and troubleshoot VLANs.
	49.09 Implement basic switch security.
50.0	Implement an IP addressing scheme and IP Services to meet network requirements in a medium-size Enterprise branch office network. The student will be able to:

	50.01 Describe the operation and benefits of using private and public IP addressing.
	50.02 Explain the operation and benefits of using DHCP and DNS.
	50.03 Implement static and dynamic addressing services for hosts in a LAN environment.
	50.04 Calculate and apply an addressing scheme including subnetting IP networks.
	50.05 Describe the technological requirements for running IPv6 in conjunction with IPv4 (e.g., protocols, dual stack, tunneling).
	50.06 Describe IPv6 addressing.
	50.07 Implement IPv6 in a network environment.
	50.08 Identify and correct common problems associated with IP addressing and host configurations.
51.0	Understand basic router operation. The student will be able to:
	51.01 Describe basic routing concepts (e.g., packet forwarding, router lookup process).
	51.02 Describe the operation of routers.
	51.03 Select the appropriate media, cables, ports and connectors to connect routers to other network devices and hosts.
	51.04 Verify network connectivity (using ping, traceroute, telnet or SSH).
	51.05 Explain the basics of routing concepts and protocols.
	51.06 Explain the basics of Network Address Translation and Port Address Translation.
52.0	Demonstrate proficiency with configuring and Troubleshooting a WLAN. The student will be able to:
	52.01 Describe the standards associated with wireless media.
	52.02 Identify and describe the purpose of the components of a small WLAN.
	52.03 Configure a small WLAN such that devices connect to the correct access point.
	52.04 Describe the security features and capabilities of WI-FI Protected Access (WPA).
	52.05 Describe common issues with implementing a WLAN and methods for addressing these issues.
	52.06 Describe the wireless security standards.
	52.07 Implement the appropriate wireless security standard.
	52.08 Design and implement a wireless network using appropriate standards.
	52.09 Identify common issues with implementing wireless networks.
	52.10 Troubleshoot common wireless network issues.
53.0	Demonstrate proficiency with configuring and Troubleshooting a Server. The student will be able to:

	53.01 Install Server OS and select appropriate roles.
	53.02 Configure different server roles (DHCP, DNS, Print Server, File Server).
	53.03 Configure network authorization and authentication on server.
	53.04 Configure web content filtering and caching (Proxy).
	53.05 Install and apply patches and updates.
	53.06 Perform network backups and select appropriate mediums.
	53.07 Perform software deployment over the network.
54.0	Demonstrate proficiency with configuring and troubleshooting a VPN. The student will be able to:
	54.01 Describe the common protocols and ports associated with a VPN.
	54.02 Setup and configure a VPN.
	54.03 Troubleshoot common issues associated with VPN connectivity.
55.0	Demonstrate proficiency with configuring and troubleshooting a VOIP. The student will be able to:
	55.01 Explain Quality of Service and how it applies to a VOIP system.
	55.02 Describe common protocols associated with VOIP.
	55.03 Explain the main features of a Call Management System.
56.0	Demonstrate proficiency with configuring and troubleshooting Virtualization. The student will be able to:
	56.01 Setup and configure a networked virtual environment (e.g. Server Farm).
	56.02 Explain the positives and negatives of virtualization.
	56.03 Explain the different types of Storage Area Network devices.
	56.04 Explain Cloud computing and cloud storage.

Additional Information

Laboratory Activities

Laboratory investigations that include scientific inquiry, research, measurement, problem solving, emerging technologies, tools and equipment, as well as, experimental, quality, and safety procedures are an integral part of this career and technical program/course. Laboratory investigations benefit all students by developing an understanding of the complexity and ambiguity of empirical work, as well as the skills required to manage, operate, calibrate and troubleshoot equipment/tools used to make observations. Students understand measurement error; and have the skills to aggregate, interpret, and present the resulting data. Equipment and supplies should be provided to enhance hands-on experiences for students.

Career and Technical Student Organization (CTSO)

CTSOs are co-curricular career and technical student organizations providing leadership training and reinforcing specific career and technical skills. Career and Technical Student Organizations provide activities for students as an integral part of the instruction offered. Other CTSOs not listed in this curriculum framework or recognized by the Florida Department of Education are permissible provided they support student mastery over the standards and benchmarks of this curriculum framework.

Cooperative Training – OJT

On-the-job training is appropriate but not required for this program. Whenever offered, the rules, guidelines, and requirements specified in the OJT framework apply.

Basic Skills

In Career Certificate Programs offered for 450 hours or more, in accordance with Rule 6A-10.040, F.A.C., the minimum basic skills grade levels required for postsecondary adult career and technical students to complete this program are: Computation (Mathematics) and Communications (Reading and Language Arts). These grade level numbers correspond to a grade equivalent score obtained on a state designated basic skills examination.

Adult students with disabilities, as defined in Section 1004.02, Florida Statutes, may be exempted from meeting the Basic Skills requirements (Rule 6A-10.040). Students served in exceptional student education (except gifted) as defined in s. 1003.01, F.S., may also be exempted from meeting the Basic Skills requirement. Each school district and Florida College must adopt a policy addressing procedures for exempting eligible students with disabilities from the Basic Skills requirement as permitted in Section 1004.91, F.S.

Accommodations

Federal and state legislation requires the provision of accommodations for students with disabilities to meet individual needs and ensure equal access. Postsecondary students with disabilities must self-identify, present documentation, request accommodations if needed, and develop a plan with their counselor and/or instructors. Accommodations received in postsecondary education may differ from those received in secondary education. Accommodations change the way the student is instructed. Students with disabilities may need accommodations in such areas as

instructional methods and materials, assignments and assessments, time demands and schedules, learning environment, assistive technology and special communication systems. Documentation of the accommodations requested and provided should be maintained in a confidential file.
Note: postsecondary curriculum and regulated secondary programs cannot be modified.