Regional Occupational Program

Cybersecurity 1: ITF+ A-G 2025-2026

COURSE DESCRIPTION

IT Fundamentals course prepares students for a career in information technology with a focus on basic IT knowledge, skills, and abilities. The course includes a series of technical subjects that provide hands-on knowledge and skills in computer hardware, operating systems, networking, and information security concepts. Students cover eight fundamental topics over the course of the semester leading to the successful completion of the CompTIA IT Fundamentals Certification.

Course Information:

Course Length:	1 Year
Prerequisite:	None
Course Level:	Introduction
UC:	Yes G - Elective
Articulated:	No
Industry Cert.:	CompTIA ITF+
Industry Sector:	Information & Communication Technologies
Pathway:	Information Support Services
CALPADS:	8110

O*Net SOC Codes:

15-1232	Computer User Support Specialist
15-1299	Computer Occupations

Legend:

CTE - PS	CTE Pathway Standards
CRP	Career Ready Practices
CTE - AS	CTE Anchor Standards
CCSS	Common Core State Standards
ISTE	International Society for Technology in Education

Includes updates from 24/25 ICT Advisory

Advisory Minutes

Cybersecurity 1: ITF+

Course Orientation

a. Discuss objectives for this course, including competencies, teacher expectations, classroom policies, and procedures.
b. Identify and discuss the acquisition of transferable skills (communication, collaboration, creativity, and critical thinking) and their importance to being college and career ready and for future personal and professional success.
c. Review objectives, competencies, and course syllabus.
d. Discuss student and teacher expectations, including behavior, class rules, appropriate dress, pre-course knowledge, and grading policies, including enrollment and attendance requirements and procedures, and classroom/school safety and disaster procedures.
e. Discuss next steps in course sequence related to the career pathway, the need for reinforcement of basic skills, transferrable skills, and postsecondary and career options.
f. Discuss the Big Six: Career Ready Essentials and the Standards for Career Ready Practice as they relate to this course, all aspects of the industry sector, and being college and career ready.

Big Six: Career Ready Essentials

1. Effective Communication	CTE - PS	CRP	CTE - AS	CCSS	ISTE
a. Demonstrate effective verbal communication and conflict resolution skills. **b. Use the writing process to develop written communication with the appropriate tone, organization, and format for the identified audience.** c. Explain the effect of interpersonal skills on one's ability to communicate effectively and develop relationships. d. Describe the impact of ineffective communication on business relationships. e. Analyze the impact of vocabulary, body language, and tone on verbal communication. f. Demonstrate active listening skills. g. Accurately interpret industry-specific written communication. h. Model responsible and effective use of various communication technologies. i. Identify valid and reliable digital reference and resource materials. j. Gather information from multiple digital sources to compare and contrast, synthesize, and summarize. k. Identify and use appropriate communication and collaboration technologies. l. Utilize technology to problem solve, accomplish tasks, and to produce or publish products.		1 2 11	2 3 4 5 7 8 9 10 11	**LS** 9-10 11-12.6 **SLS** 11-12.2 9-10 11-12.1 11-12.1d **WS** 11-12.7 11-12.6	1b,c 2c 3b,c 5c 6b,c,d

2. Collaboration, Creativity, and Critical Thinking	CTE - PS	CRP	CTE - AS	CCSS	ISTE
a. Demonstrate critical thinking skills for a variety of purposes and in different settings. **b. Collaborate to reach consensus on an identical objective through the sharing of knowledge, tasks, and learning.** c. Discuss the importance of the critical thinking process to real-world applications.		2 4 5 7	2 3 4 5	**LS** 9-10 11- 12.6	1c 3c,d 4a-d 5c,d

d. Evaluate the impact of creative thinking on problem solving and innovation in real-world applications. e. Compile work that demonstrates the process used to (elaborate, refine, analyze) evaluate original ideas and maximize creative efforts. f. Apply divergent and convergent thinking to the development of an original idea or solution. g. Examine real-world limits to adopting ideas. h. Demonstrate creative thinking (preparation, insight, evaluation, elaboration, and communication) to create a new idea or concept. i. Assume shared responsibility for collaborative work, and value the individual contributions made by each team member. j. Evaluate evidence, arguments, claims, and beliefs to identify connections. k. Identify bias, prejudice, propaganda, self-deception, distortion, and misinformation. l. Produce intellectual, informational, or material products that serve an authentic purpose. m. Work effectively and respectfully with those from diverse backgrounds or cultures. n. Demonstrate respect, trust, commitment, and the ability to compromise in collaborative projects.		9 10 11	7 8 9 11	**SLS** 9-10 11-12.1 11-12.1d 11-12.2 **WS** 11-12.7 11-12.6	6c 7b,c,d
3. Leaders and Teams: Roles and Responsibilities	**CTE – PS**	**CRP**	**CTE - AS**	**CCSS**	**ISTE**
a. Determine the individual and team members' roles and responsibilities. **b. Demonstrate leadership skills and qualities (i.e., reliability, negotiation skills, initiative, positive reinforcement, recognition of others' efforts, problem-solving skills, conflict resolution, and delegation).** c. Explain the importance of technical, social, and communication skills to team success. d. Compare and contrast leadership styles and their effectiveness in various situations. e. Organize and delegate responsibilities in a team setting to encourage ideas, perspectives, and contributions from all team members. f. Develop a strong sense of team identity by brainstorming solutions, volunteering, assisting others, practicing respect and courtesy, and taking initiative. g. Examine situations in which a follower becomes the leader. h. Describe twenty-first-century skills required across all occupations. i. Identify and discuss the characteristics of a successful team (i.e., leadership, cooperation, and effective decision-making). j. Leverage social and cultural differences to increase innovation and quality of work.		7 8 9	3 7 8 9 11	**SLS** 11-12.2 9-10 11-12.1 11-12.1d **WS** 11-12.6	7a,c
4. Legal, Ethical, and Environmental Considerations	**CTE - PS**	**CRP**	**CTE - AS**	**CCSS**	**ISTE**
a. Demonstrate industry specific ethical and legal practices. **b. Identify eco-friendly industry specific practices and resources.** c. Identify local, state, and federal regulatory agencies, entities, laws, and regulations.		5 7 8	3 5 7	**WS** 11-12.6 11-12.7	2a,b 3a,b 5c

d. Identify discrimination based on race, nationality, religion, gender, age, disability, or sexual orientation. e. Summarize the ethical and legal implications of workplace discrimination and harassment. f. Explain the concept of corporate citizenship. g. Examine an employer's role in protecting the health and welfare of employees, the community, and the environment. h. Analyze current environmental laws and regulations and their impact on industry. i. Compare and contrast both society's and industry's impact on the environment.		12	8 9 11	**SLS** 9-10 11-12.1 11-12.1d 11-12.2	6c
5. Personal Growth and Career Planning	**CTE - PS**	**CRP**	**CTE - AS**	**CCSS**	**ISTE**
a. Demonstrate continued personal development and growth. **b. Develop and manage a personal growth and career plan.** c. Explain the relationship between sound financial habits and financial security. d. Create and manage a personal financial plan. e. Demonstrate initiative in achieving personal and professional goals. f. Apply time management strategies to meet deadlines. g. Demonstrate a growth mindset through flexibility and a positive attitude. h. Select and demonstrate appropriate job-search and retention techniques. i. Demonstrate strategies to prepare for employment. j. Demonstrate interpersonal skills appropriate for the workplace. k. Elaborate on the importance of perseverance to personal and professional success. l. Discover personal career interests, aptitudes, and skills.		1 2 3 4 6	2 3 4 7 8 11	**LS** 9-10 11-12.6 **SLS** 9-10 11-12.1 11-12.1d 11-12.2 **WS** 11-12.6	1a 3a,c 4d 6a,d 7b
6. Workplace Safety and Personal Wellness	**CTE - PS**	**CRP**	**CTE - AS**	**CCSS**	**ISTE**
a. Demonstrate proper industry specific safe work practices to prevent injury or illness. **b. Assess the potential impact of goal setting on personal and professional success.** c. Describe the role of security and emergency procedures in workplace safety. d. Describe the effect of preventative measures on emergencies in the workplace. e. Identify and describe the causes, prevention, and treatment of common accidents. f. Identify local, state, and federal agencies that regulate workplace safety. g. Explain the role of the California Occupational Safety and Health Administration (Cal-OSHA) and the Environmental Protection Agency (EPA). h. Discuss the basics of system operations. i. Demonstrate the proper use of personal protective equipment (PPE). j. Explain the purpose of and accurately interpret a Safety Data Sheet (SDS). k. Identify hazardous materials and chemicals. l. Demonstrate proper procedures to respond to work-related accidents and injuries. m. Describe how ergonomics, housekeeping, and maintenance are related to accidents and injuries.		2 5 6 8 12	2 5 6 7 8 10 11	**LS** 9-10 11-12.6 **WS** 11-12.7 11-12.6 **SLS** 9-10 11-12.1 11-12.1d	1a,d 2a,d 5b

n. Demonstrate cyber ethics, cyber safety, and cybersecurity. o. Assess the potential impact of preventative physical and mental health measures on workplace safety.					
Cybersecurity 1: ITF+ Units of Instruction					
7. Identifying Computer Hardware	**CTE-PS**	**CRP**	**CTE- AS**	**CCSS**	**ISTE**
a. Demonstrate the ability to identify hardware components commonly found in or attached to personal computers. b. Identify various types of computing devices used in today's workplace. c. Identify internal computer components. d. Compare common computer connector types. e. Identify common peripheral devices.		1 2 4 5	1 2 4 5 10 11	**LS** 9-10 11-12.6 **WS** 11-12.6 11-12.7	
8. Identify Computer Software	**CTE - PS**	**CRP**	**CTE - AS**	**CCSS**	**ISTE**
a. **Demonstrate the ability to identify common software applications and operating systems as well as the functions and features of both.** b. Compare the functions and features of common operating systems. c. Identify common applications and their purposes.		1 2 4 5	1 2 4 5 10 11	**LS** 9-10 11-12.6 **WS** 11-12.6 11-12.7	
9. Setting up a Basic Workstation	**CTE - PS**	**CRP**	**CTE - AS**	**CCSS**	**ISTE**
a. Demonstrate the ability to set up and configure a basic workstation to meet the needs of users within an organization. b. Demonstrate the ability to connect hardware. c. Install and configure operating systems. d. Install and configure applications. e. Configure accessibility options.	A2.0 A2.3	1 2 4 5	1 2 4 5 10 11	**LS** 9-10 11-12.6 **WS** 11-12.6 11-12.7	
10. Configuring Network Access	**CTE - PS**	**CRP**	**CTE - AS**	**CCSS**	**ISTE**
a. **Demonstrate the ability to configure network access to a workstation for the purpose of sharing files and data.** b. Compare network connection types. c. Install and configure a SOHO router. d. Identify the purpose of network and alternative technologies. e. Compare methods for sharing and storing information.	A2.4 A3.1 A6.4	1 2 4 5	1 2 4 5 10 11	**LS** 9-10 11-12.6 **WS** 11-12.6 11-12.7	

11. Working with Files, Folders, and Applications	CTE - PS	CRP	CTE - AS	CCSS	ISTE
a. Demonstrate the ability to set up files and folders to store and easily access information within a workstation. b. Demonstrate the ability to create files. c. Demonstrate the ability to navigate the system file structure. d. Demonstrate the ability to manage files and folders. e. Demonstrate the ability to compress and extract files. f. Demonstrate the ability to create screen captures.	A2.4 A3.0 A4.0 A4.1	1 2 4 5	1 2 4 5 10 11	**LS** 9-10 11-12.6 **WS** 11-12.6 11-12.7	

12. Configuring Wireless Devices	CTE - PS	CRP	CTE - AS	CCSS	ISTE
a. Demonstrate the ability to connect and configure wireless devices to a network. b. Configure wireless devices. c. Demonstrate the ability to use wireless devices.		1 2 4 5	1 2 4 5 10 11	**LS** 9-10 11-12.6 **WS** 11-12.6 11-12.7	

13. Securing Computer Devices	CTE - PS	CRP	CTE - AS	CCSS	ISTE
a. Demonstrate the ability to keep data safe and secure computers from potential cyber threats. b. Identify common security threats. c. Apply security best practices. d. Perform secure web browsing.	A5.0 A5.1 A5.2 A5.3 A5.4	1 2 4 5	1 2 4 5 10 11	**LS** 9-10 11-12.6 **WS** 11-12.6 11-12.7	

14. Supporting Computers and Users	CTE - PS	CRP	CTE - AS	CCSS	ISTE
a. **Demonstrate the ability to support users within an organization including troubleshooting, file management, security, and implementing backups.** b. Describe the importance and impact of environmental and safety concerns. c. Demonstrate the ability to backup and restore data. d. Demonstrate the ability to manage software. e. Implement basic support measures.	A6.2 A6.3 A6.5 A7.0 A7.2 A7.3 A8.2	1 2 4 5	1 2 4 5 10 11	**LS** 9-10 11-12.6 **WS** 11-12.6 11-12.7	

A-G Approved Key Assignments	
1.	It's All in a Day's Work: In this assignment students, using the Internet, newspapers, and other media, research and gather information about employment in the computer service and repair field. Students explore the potential job and labor markets for employment, paying close attention to certification and hiring requirements, as well as salary and benefits. Either individually or in small groups students present their findings. *Unit(s) 7*
2.	Let's Shop Around: In this assignment small groups (3-4 students) work together to complete a customer's computer order. Based on a given scenario and a list of identified components students research, identify, and locate the appropriate 'missing' computer parts. For instance, students might be asked to determine a compatible CPU, or a cooling fan based on the described motherboard, or based on hard drive specifications students might research and determine a compatible video card. Students utilize the internet to locate and price the best solutions. *Unit(s) 7*
3.	What Does it Mean: This is an on-going assignment that students start at the beginning of the course and carry through as new terminology and vocabulary are introduced. Students create a personal technology dictionary that includes a written description and an image or drawing of the word. *Unit(s) 7*
4.	In the Eye of the Beholder: Based on specified criteria, i.e., display screen size, RAM, OS, wireless capacity, etc., students select three current model notebook or laptop computers to compare and contrast. Based on the teams' thinking maps, students write a 1-2page document that identifies the pros and cons of each computer and a recommendation for one of the computers. Students utilize the Internet to determine the cost of the recommended machine including tax and shipping. *Unit(s) 7*
5.	Keep it Real: Based on a real-world scenario, student teams are tasked with determining the 'right' peripherals for a school office and are given a list of computers currently being used in the office (students are given a list and specifications of notebooks and desktop computers, monitors, etc.). Students are to research all required and optional peripherals available for the listed devices and create a report for the school principal that includes the team recommendations and vendor prices. Teams prepare and present their findings to the whole class. *Unit(s) 7*
6.	Breaker Space: In this assignment, students working in pairs are tasked with breaking down (computer disassembly), utilizing industry-specific tools and observing all safety precautions, including antistatic tools and techniques. Students correctly identify the various removable media devices, name the physical components of a hard drive. Students work from a rubric and are required to take notes and/or draw the components as the computer is disassembled. *Unit(s) 7*
7.	Having a Chat with my Toaster: Small teams (3 -4 students) brainstorm and work collaboratively to identify the purpose and uses of personal computers and IoT and describe local and network applications. Teams research how and where computers are being used (think of today's refrigerators, cars, and washing machines to name just a few). Identify the operating and application software and tasks performed. Students identify input, output, processing, and storage. Utilizing presentation software such as PowerPoint, Google Slides, or Prezi, teams present their findings to the class. *Unit(s) 8*
8.	Help Wanted: In this activity student teams research virtual assistants found on their phones or other digital devices and compare and contrast features, basic commands, information the device/assistant has access to, and how the devices differ, etc. Then acting as an R&D design team, the group formulates the next version with its upgraded features. Students prepare and present their design concepts to the whole class. Unit(s) 8
9.	Game Time: In this activity student teams devise a game that teaches the type of application software and their associated file extensions. Each team builds a prototype, tests their design for effectiveness, and teaches the 1`game to the class. Using a rubric, class members rate the game design for function and form. *Unit(s) 8*
10.	Building it from Scratch: In this activity students work in pairs and are tasked with building their own Windows machine from components and peripherals such as microphones, mice, speakers, etc., that are available. Using a checklist and a rubric the pair works together to share the build

	and notetaking responsibilities. Once completed, the team will repeat the process to build the other team member's computer. Using a template provided by the teacher, students complete and submit a build report that outlines the builds process. *Unit(s) 9*
11.	Install and Configure Operating Systems: This activity requires students to successfully install and configure operating systems, understand HCL, minimum requirements, and common operating system configuration parameters and localization settings. Working in pairs and using checklists and rubrics, students complete the process for operating system configuration, peripheral configuration, and making OS updates. Student pairs recreate their notes to create and submit an installation report. U*nit(s) 9*
12.	Installing and Configuring Windows: Students work in pairs to install Windows operating system utilizing installation media and product keys, checklists, and rubrics. If applicable students will partition drives for installation. Students keep notes of the process and when successfully completed write and submit an installation report that includes all installation phases including installation features, files, identifying hardware and installing drivers, and finalizing Registry settings. *Unit(s) 9*
13.	Installing and Configuring Applications: In this activity students work in pairs to select, install, and configure appropriate software applications. Students are challenged to identify, select, and install only applications needed by the end user. Based on scenarios provided by the teacher, students analyze the technology needs of the end user, and identify an array of applications that optimize a workstation. Students select from bundled applications, create a software inventory, and follow guidelines for ensuring only necessary applications are installed. Students conduct research and identify a web browser, an email client, word processing software or open-source program, security software, and any software updates required. Students share their findings with the class. *Unit(s) 9*
14.	WAN versus LAN: Students work together to compare and contrast a local area network (LAN) with a wide area network (LAN) using a handout provided by the teacher that includes variables such as bandwidth, geographical area and speed, definition, hardware, and connection. *Unit(s) 10*
15.	It's Topo to me!: In this activity students will research and collaborate to develop a network topography comparison that includes Bus, Mesh, Star, and Ring types and address the following: information transfer, setup expansion, and troubleshooting. Students graph, chart, and share their findings. *Unit(s) 10*
16.	Sharing and Storage Methods: In this activity students learn about various storage devices and methods for sharing information. Based on scenarios provided by the teacher, student teams will brainstorm, research, and compare and contrast data storage methods. Teams will determine the capacity and levels of security for each storage location. *Unit(s) 10*
17.	Scenario: Based on a teacher-provided real-world scenario, students are tasked with developing a process or activity that teaches their classmates how to create rich text, bitmap, and plain text format files. Using presentation applications like PowerPoint, Google Slides, or Prezi, teams develop and presentation and lead an activity or a game that teaches various file formats. *Unit(s) 11*
18.	Managing Files and Folders: In this activity students working in pairs learn basic file and folder management techniques that include file creation, and how to open and edit files. Student teams are tasked to develop a flyer that can be distributed to staff and students that provides their top 10 tips and tricks for file management and safety. The class selects the best flyer for distribution and the document is disseminated around campus and on the school website. *Unit(s) 11*
19.	Configuring Wireless Devices: In this activity students learn how to configure communication methods such as a wide range of wireless devices, i.e., phones, printers, speakers, etc. through Bluetooth pairing, NFC, and email, and establishing data synchronization, as well as installing mobile apps. Students learn how to maximize functionality of mobile devices *Unit(s) 12*
20.	History and Impact of Wireless Technology: Mobile phones started as a tool to make calls on the go, a revolutionary idea that rapidly changed when and how we communicated with others. Today these devices allow us to text, play games, watch videos, listen to music and podcasts, send email, search the Internet, and download and use thousands of apps that make our personal and professional lives easier. Students explore the impact of wireless communication from past to present and examine the impact this form of communication has on our lives. In this activity

	student groups create a timeline that begins with the first commercial cellular system created in 1983 to current day. Students will research wireless technology and as a team create a survey instrument that will gather pertinent data about wireless technology use and assess attitudes and knowledge about wireless devices among their family, friends, and peers. Students administer the survey, collect, and analyze data, create charts and graphs that depict and present their findings to the whole class. *Unit(s) 12*
21.	Mobile Evolution or Revolution?: In this assignment student teams (3-4 students) work collaboratively to research, gather information, and prepare a presentation that addresses the manner in which mobile and wireless technology has changed (positively and negatively) the way we interact with each other and with the environment. Topics to be researched include social relationships, political decisions, economic prosperity, and the environment. Students will prepare a presentation that addresses these topics and includes their prediction on how mobile technology will impact society in the future. Students will utilize mind maps, graphic organizers, rubrics, and checklists to research and create their presentation. *Unit(s) 12*
22.	'I Wonder' Writing Assignment': In this assignment students will write a 3-4-page essay that incorporates what they have learned about wireless technology and mobile devices in this unit and address the following prompt: "Imagine it is the year 2025 and you are out of school and working full time. What does mobile technology look like? Have smartphones and tablets been replaced by another device? Are desktops and landlines obsolete? How would you use wireless technology in your work and personal life? *Unit(s) 12*
23.	Identifying Security Threats: Students teams will research and identify important components of business and school security policies and, as a team, make revisions, updates, and suggested changes to the school district 's or a local company's security policy. Each team will create an analysis and write a report of the security policy. Teams will present their findings to the whole class, and when possible, to site and/or district IT department personnel. *Unit(s) 13, 14*
24.	Best Practices Handbook: Teams of 3-4 students are tasked with creating a handbook that identifies best practices for students, parents, and staff that address the following topics: email best practices, password management best practices, social engineering attacks such as spoofing, spamming, phishing, etc. The teacher can assign each group a topic to be covered in the handbook or brochure and if possible, the digital media class at the school might participate by creating the design of the handbook. The handbook can be made available through the school website, emailing the link to staff, students, and parents. *Unit(s) 13, 14*
25.	Final Research Project: Student teams are tasked with creating a research project based on a topic of interest from the course curriculum. Project-based learning provides opportunities for students to tackle real-world problems and challenges and presents an opportunity for a deeper learning in-context and for the development of important life and career readiness. Students use checklists, graphic organizers and rubrics designed for support through the various stages of research through design. Student teams present their team projects to an authentic audience comprised of school, district, and local IT professionals. *Unit(s) 13, 14*

Standards Alignment

The curricula have been aligned with the CTE Model Curriculum Standards released in 2013. Each industry sector was updated to meet the increased rigor and relevancy requirements of the Common Core State Standards. The curriculum also includes the new Standards for Career Ready Practices.

Standards for Career Ready Practice

1. *Apply appropriate technical skills and academic knowledge.*
2. *Communicate clearly, effectively, and with reason.*
3. *Develop an education and career plan aligned with personal goals.*
4. *Apply technology to enhance productivity.*
5. *Utilize critical thinking to make sense of problems and persevere in solving them.*
6. *Practice personal health and understand financial literacy.*
7. *Act as a responsible citizen in the workplace and the community.*
8. *Model integrity, ethical leadership, and effective management.*
9. *Work productively in teams while integrating cultural and global competence.*
10. *Demonstrate creativity and innovation.*
11. *Employ valid and reliable research strategies.*
12. *Understand the environmental, social, and economic impacts of decisions.*

CTE Anchor Standards—Common Core English Language Arts Alignment

Anchor Standard 1: Academics

Analyze and apply appropriate academic standards required for successful industry sector pathway completion leading to postsecondary education and employment. Refer to the industry sector alignment matrix for identification of standards. Note: alignment listed within each sector.

Anchor Standard 2: Communications

Language Standard: Acquire and accurately use general academic and domain-specific words and phrases sufficient for reading, writing, speaking, and listening at the (career and college) readiness level; demonstrate independence in gathering vocabulary knowledge when considering a word or phrase important to comprehension or expression. LS 9-10, 11-12.6

Anchor Standard 3: Career Planning and Management

Speaking and Listening Standard: Integrate multiple sources of information presented in diverse formats and media (e.g., visually, quantitatively, orally) in order to make informed decisions and solve problems, evaluating the credibility and accuracy of each source and noting any discrepancies among the data. SLS 11-12.2

Anchor Standard 4: Technology

Writing Standard: Use technology, including the Internet, to produce, publish, and update individual or shared writing products in response to ongoing feedback, including new arguments and information.

Anchor Standard 5: Problem Solving and Critical Thinking

Writing Standard: Conduct short as well as more sustained research projects to answer a question (including a self-generated question) or solve a problem, narrow, or broaden the inquiry when appropriate, and synthesize multiple sources on the subject, demonstrating understanding of the subject under investigation. WS 11-12.7

Anchor Standard 6: Health and Safety

Reading Standards for Science and Technical Subjects: Determine the meaning of symbols, keywords, and other domain-specific words and phrases as they are used in a specific scientific or technical context. RSTS 9-10, 11-12.4

Anchor Standard 7: Responsibility and Flexibility

Speaking and Listening Standard: Initiate and participate effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners, building on others' ideas and expressing their own clearly and persuasively. SLS 9-10, 11-12.1

Anchor Standard 8: Ethics and Legal Responsibilities

Speaking and Listening Standard: Respond thoughtfully to diverse perspectives; synthesize comments, claims, and evidence made on all sides of an issue; resolve contradictions when possible; and determine what additional information or research is required to deepen the investigation or complete the work. SLS 11-2.1d

Anchor Standard 9: Leadership and Teamwork

Speaking and Listening Standard: Work with peers to promote civil, democratic discussions and decision making; set clear goals and deadlines; and establish individual roles as needed. SLS 11-12.1b

Anchor Standard 10: Technical Knowledge and Skills

Writing Standard: Use technology, including the Internet, to produce, publish, and update individual or shared writing products in response to ongoing feedback, including new arguments or information. WS 11-12.6

Anchor Standard 11: Demonstration and Application

Demonstrate and apply the knowledge and skills contained in the industry-sector anchor standards, pathway standards, and performance indicators in the classroom, laboratory, and workplace settings, and the career technical student organization. Note: no alignment evident for this standard. WS 11-12.6

CTE Model Curriculum Standards—Industry Sectors and Pathways

Information and Communication Technologies

A. Information Support and Services Pathway

A2.0 Acquire, install, and implement software and systems.

A2.3 Install software and setup hardware.

A2.4 Define and use appropriate naming conventions and file management strategies.

A3.0 Access and transmit information in a networked environment.

A3.1 Identify and apply multiple ways to transfer information and resources (e.g., text, data, audio, video, still images) between software programs and systems.

A4.0 Administer and maintain software and systems.

A4.1 Use different systems and associated utilities to perform such functions as file management, backup and recovery, and execution of programs.

A5.0 Identify requirements for maintaining secure network systems.

A5.1 Follow laws, regulatory guidelines, policies, and procedures to ensure the security and integrity of information systems.

A5.2 Identify potential attack vectors and security threats.

A5.3 Take preventative measures to reduce security risks (e.g., strong passwords, avoid social engineering ploys, limit account permissions).

A5.4 Use security software and hardware to protect systems from attack and alert of potential threats, anti-malware software, and firewalls.

A6.0 Diagnose and solve software, hardware, networking, and security problems.

A6.2 Use a logical and structured approach to isolate and identify the source of problems and to resolve problems.

A6.3 Use specific problem-solving strategies appropriate to troubleshooting, eliminating possibilities, or guess and check.

A6.4 Evaluate support needs for different data and systems configurations.

A6.5 Evaluate solution methods recognizing the trade-offs of troubleshooting vs. reloading, reimaging, or restoring to factory defaults using a sandbox environment.

A7.0 Support and train users on various software, hardware, and network systems.

A7.2 Describe and apply the principles of a customer-oriented service approach to supporting users.

A7.3 Use technical writing and communication skills to work effectively with diverse groups of people, including users with less technical abilities.

A8.2 Acquire, use, and manage necessary internal and external resources when supporting various organizational systems.

ISTE Standards for Students

1. Empowered Learner- Students leverage technology to take an active role in choosing, achieving, and demonstrating competency in their learning goals, informed by the learning sciences.

a) Students articulate and set personal learning goals, develop strategies leveraging technology to achieve them, and reflect on the learning process itself to improve learning outcomes.

b) Students build networks and customize their learning environments in ways that support the learning process.

c) Students use technology to seek feedback that informs and improves their practice and to demonstrate their learning in a variety of ways

d) Students understand the fundamental concepts of technology operations, demonstrate the ability to choose, use and troubleshoot current technologies and are able to transfer their knowledge to explore emerging technologies.

2. Digital Citizen- Students recognize the rights, responsibilities, and opportunities of living, learning, and working in an interconnected digital world, and they act and model in ways that are safe, legal, and ethical.

a) Students cultivate and manage their digital identity and reputation and are aware of the permanence of their actions in the digital world.

b) Students engage in positive, safe, legal, and ethical behavior when using technology, including social interactions online or when using networked devices.

c) Students demonstrate an understanding of and respect for the rights and obligations of using and sharing intellectual property.

d) Stu their personal data to maintain digital privacy and security and are aware of data-collection technology used to track their navigation online.

3.Knowledge Constructor- Students critically curate a variety of resources using digital tools to construct knowledge, produce creative artifacts, and make meaningful learning experiences for themselves and others.

a) Students plan and employ effective research strategies to locate information and other resources for their intellectual or creative pursuits.

b) Students evaluate the accuracy, perspective, credibility, and relevance of information, media, data, or other resources.

c) Students curate information from digital resources using a variety of tools and methods to create collections of artifacts that demonstrate meaningful connections or conclusions.

d) Students build knowledge by actively exploring real-world issues and problems, developing ideas and theories, and pursuing answers and solutions.

4. Innovative Designer- Students use a variety of technologies within a design process to identify and solve problems creating new, useful, or imaginative solutions.

a) Students know and use a deliberate design process for generating ideas, testing theories, creating innovative artifacts, or solving authentic problems.

b) Students select and use digital tools to plan and manage a design process that considers design constraints and calculated risks.

c) Students develop, test, and refine prototypes as part of a cyclical design process.

d) Students exhibit a tolerance for ambiguity, perseverance, and the capacity to work with open-ended problems.

5. Computational Thinker- Students develop and employ strategies for understanding and solving problems in ways that leverage the power of technological methods to develop and test solutions.

a) Students formulate problem definitions suited for technology-assisted methods such as data analysis, abstract models, and algorithmic thinking in exploring and finding solutions.

b) Students collect data or identify relevant data sets, use digital tools to analyze them, and represent data in various ways to facilitate problem-solving and decision-making.

c) Students break problems into component parts, extract key information, and develop descriptive models to understand complex systems or facilitate problem-solving.

d) Students understand how automation works and use algorithmic thinking to develop a sequence of steps to create and test automated solutions.

6. Creative Communicator- Students communicate clearly and express themselves creatively for a variety of purposes using platforms, tools, styles, formats, and digital media appropriate for their goals.

a) Students choose the appropriate platforms and tools for meeting the desired objectives of their creation or communication.

b) Students create original works or responsibly repurpose or remix digital resources into new creations.

c) Students communicate complex ideas clearly and effectively by creating or using a variety of digital objects such as visualizations, models, or simulations.

d) Students publish or present content that customizes the message and medium for their intended audiences.

7. Global Collaborator- Students use digital tools to broaden their perspectives and enrich their learning by collaborating with others and working effectively in teams locally and globally.

a) Students use digital tools to connect with learners from a variety of backgrounds and cultures, engaging with them in ways that broaden mutual understanding and learning.

b) Students use collaborative technologies to work with others, including peers, experts, or community members, to examine issues and problems from multiple viewpoints.

c) Students contribute constructively to project teams, assuming various roles and responsibilities to work effectively toward a common goal.

d) Students explore local and global issues and use collaborative technologies to work with others to investigate solutions.