Regional Occupational Program

Cybersecurity 2: Network+ A-G 2026-2027

COURSE DESCRIPTION

This course prepares students to develop foundational and intermediate networking knowledge and skills aligned to current Network+ certification content. Students study network communication, local and wide area networks, the OSI and TCP/IP models, wired and wireless networking, IPv4 and IPv6 addressing, network services, routing, switching, cloud and virtual networking concepts, network documentation, monitoring, troubleshooting, and network security practices.

Through hands-on labs and project-based assignments, students configure network devices and services, use command-line tools, analyze network connectivity, document network configurations, apply basic security controls, and troubleshoot common network issues. Students who achieve competency in this course will build skills aligned to CompTIA Network+ and will be prepared to continue in the cybersecurity and information technology course sequence.

Course Information:

Course Length:	1 Year
Prerequisite:	None
Course Level:	Concentrator
UC:	Yes G - Elective
Articulated:	No
Industry Cert.:	CompTIA Network+
Industry Sector:	Information and Communication Technologies
Pathway:	Information and Support Services
CALPADS:	8111

O*Net SOC Codes:

15-1231	Computer Network Support Specialists
15-1241	Computer Network Architects
15-1244	Network and Computer Systems Administrators

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 25/26 ICT Advisory

Advisory Minutes

Cybersecurity 2: Network+

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 2: Network+ Units of Instruction					
7. Understanding Local Area Networks	**CTE-PS**	**CRP**	**CTE- AS**	**CCSS**	**ISTE**
a. **Demonstrate understanding of local area network (LAN) fundamentals, including basic design, installation, connectivity, and documentation.** b. Identify LAN devices, media, addressing concepts, and methods used to transfer data within a local network. c. Identify common physical and logical network topologies, standards, and basic LAN design considerations.	A3.0 A3.3	1 2 4 5	1 2 4 10 11	**LS** 9-10 11-12.6 **WS** 11-12.6	
8. Defining Network Communication with the OSI and TCP/IP Models	**CTE - PS**	**CRP**	**CTE - AS**	**CCSS**	**ISTE**
a. **Demonstrate understanding of the Open Systems Interconnection (OSI) model and TCP/IP model, including how layered models describe data communication across a network.** b. Identify and describe the OSI model layers, including the purpose of each layer and examples of related protocols, devices, or functions. c. Explain how addressing, protocols, and network devices support communication between systems across local and remote networks.	A3.5	1 2 4 5	1 2 4 10 11	**LS** 9-10 11-12.6 **WS** 11-12.6	
9. Installing and Configuring Wired and Wireless Networks	**CTE - PS**	**CRP**	**CTE - AS**	**CCSS**	**ISTE**
a. Demonstrate understanding of the tools, cabling, wireless technologies, and network equipment used to install, configure, and troubleshoot wired and wireless networks. b. Identify common wired and wireless network media, standards, connectors, and characteristics. c. Demonstrate the ability to install and configure a basic wireless network using appropriate setup, security, placement, and connectivity practices.	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. Understanding IP Addressing and Internet Protocols	**CTE - PS**	**CRP**	**CTE - AS**	**CCSS**	**ISTE**
a. **Demonstrate the ability to configure and explain basic Layer 3 communication using IPv4 and IPv6 addressing, gateways, and routing concepts.** b. Demonstrate the ability to identify, configure, and troubleshoot basic IPv4 addressing and related settings. c. Demonstrate the ability to identify, configure, and troubleshoot basic IPv6 addressing concepts and related settings.	A 3.6	1 2 4 5	1 2 4 5 10 11	**LS** 9-10 11-12.6 **WS** 11-12.6 11-12.7	

11. Using Command-Line Tools for Network Configuration and Troubleshooting	CTE - PS	CRP	CTE - AS	CCSS	ISTE
a. **Demonstrate the ability to use command-line tools to view, configure, test, and troubleshoot TCP/IP network settings.** b. Demonstrate the ability to use common network commands to gather network information and test connectivity. c. Interpret command-line results to identify connectivity, addressing, name-resolution, routing, and performance issues.	A4.2	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 and Supporting Network Services	**CTE - PS**	**CRP**	**CTE - AS**	**CCSS**	**ISTE**
a. Demonstrate the ability to identify, configure, and support common network services such as DHCP, DNS, name resolution, directory, remote access, and related services. b. Demonstrate the ability to set up, verify, and troubleshoot common networking services. c. Identify common network services and explain their purpose in supporting network communication, access, and resource sharing. d. Identify and explain name-resolution methods and related troubleshooting practices.	A2.4	1 2 4 5	1 2 4 5 10 11	**LS** 9-10 11-12.6 **WS** 11-12.6 11-12.7	
13. Understanding WAN and Internet Connectivity	**CTE - PS**	**CRP**	**CTE - AS**	**CCSS**	**ISTE**
a. **Demonstrate understanding of wide area network (WAN) and internet connectivity concepts, including how networks connect across locations and service providers.** b. Demonstrate the ability to configure basic router settings and verify connectivity. c. Identify and compare common WAN and internet connectivity technologies, connection types, and related service considerations.	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	
14. Defining Network Infrastructure and Security	**CTE - PS**	**CRP**	**CTE - AS**	**CCSS**	**ISTE**
a. **Demonstrate understanding of basic network security practices, including secure connectivity, segmentation, access control, monitoring, and use of security devices or services.** b. Identify network infrastructure beyond the LAN, including WAN, internet, cloud, remote access, and externally connected network environments. c. Demonstrate the ability to identify, configure, or explain basic security devices, services, zones, and network segmentation practices.	A5.0 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	
15. Planning, Installing, and Configuring Server Operating Systems	**CTE - PS**	**CRP**	**CTE - AS**	**CCSS**	**ISTE**
a. **Demonstrate the ability to plan, install, and configure a server operating system or server-based network environment using appropriate procedures and documentation.**	A2.0 A2.3 A8.0	1 2 4	1 2 4	**LS** 9-10 11-12.6	

b. Describe the features and capabilities of current server operating systems, including network services, user and resource management, storage, security, and remote administration. c. Describe server management tools and practices used to configure, monitor, maintain, and troubleshoot server-based network environments.	A8.1 A8.2	5	5 10 11	**WS** 11-12.6 11-12.7	
16. Configuring Directory Services and Domain Environments	**CTE - PS**	**CRP**	**CTE - AS**	**CCSS**	**ISTE**
a. **Demonstrate the ability to identify, install, or configure directory services, domain services, and related server roles using appropriate procedures and documentation.** b. Describe the purpose of directory services, including centralized authentication, authorization, user accounts, groups, devices, and organizational resources. c. Demonstrate or explain the process for configuring a domain controller or directory-services environment in a lab or simulated network setting.	A2.0 A5.0 A5.1	1 2 4 5	1 2 4 5 10 11	**LS** 9-10 11-12.6 **WS** 11-12.6 11-12.7	
17. Administering Directory Objects and User Access	**CTE - PS**	**CRP**	**CTE - AS**	**CCSS**	**ISTE**
a. **Demonstrate the ability to design a basic directory-services hierarchy and create, organize, and administer directory objects.** b. Manage user accounts using appropriate naming, access, security, and documentation practices. c. Join devices to a domain or directory-services environment and create or manage related device accounts. d. Manage group accounts, permissions, and access to network resources. e. Explain or demonstrate delegation of directory-services administrative tasks using appropriate roles, permissions, and security practices.	A4.0 A5.0	1 2 4 5 10	1 2 4 5 10 11	**LS** 9-10 11-12.6 **WS** 11-12.6 11-12.7	
18. Automating Network and System Administrative Tasks	**CTE - PS**	**CRP**	**CTE - AS**	**CCSS**	**ISTE**
a. **Demonstrate the ability to use command-line, scripting, or automation tools as an alternative to manual navigation through a graphical user interface to simplify routine administrative tasks.** b. Demonstrate the ability to use appropriate automation tools to manage directory objects, user accounts, groups, devices, or network resources in a lab or simulated environment. c. Use command-line or administrative tools to support directory-services and network administration tasks. d. Explain or demonstrate bulk operations used to create, update, manage, or document multiple accounts, devices, or resources efficiently.	A4.1 A4.2 A4.3 B4.0	1 2 4 5 10	1 2 4 5 10 11	**LS** 9-10 11-12.6 **WS** 11-12.6 11-12.7	
19. Configuring Policy-Based Security and Access Controls	**CTE - PS**	**CRP**	**CTE - AS**	**CCSS**	**ISTE**

a. **Demonstrate the ability to use policy-based tools or settings to simplify security, access, and administrative tasks.** b. Explain or demonstrate how policy objects or policy settings can be created, applied, and managed in a domain, directory-services, or managed-device environment. c. Explain or demonstrate how centralized policy templates, shared configurations, or administrative resources support consistent policy management.	A4.3 A5.2	1 2 4 5 10	1 2 4 5 10 11	**LS** 9-10 11-12.6 **WS** 11-12.6 11-12.7	
20. Securing Server and Network Environments	**CTE - PS**	**CRP**	**CTE - AS**	**CCSS**	**ISTE**
a. **Demonstrate the ability to protect server and network communications from unauthorized access, misuse, and malicious activity.** b. Configure or explain user security settings, permissions, authentication, authorization, and access controls in a server or directory-services environment. c. Configure or explain host-based and network-based firewall settings and related security controls used to protect systems and network services.	A5.0 A5.3 A5.4	1 2 4 5 10	1 2 4 5 10	**LS** 9-10 11-12.6 **WS** 11-12.6 11-12.7	

A-G Approved Key Assignments	
1.	Password Vulnerability: Students will investigate password vulnerability, password strength, and secure password-handling practices using teacher-approved tools, simulated data, or a controlled lab activity. Students will document the objective, process, results, and relationship to online safety, authentication, and responsible security practices in a reflective journal. *Unit(s) 7, 8, 9, 10, 11, 12, 13*
2.	Router Web Access: Students will use a router or network-management interface to review connected clients and identify computers and mobile devices, such as phones and tablets, on a local network. Students will document the purpose of DHCP client information and how it supports network monitoring and troubleshooting. *Unit(s) 7, 8, 9, 10, 11, 12, 13*
3.	Purge Script: Students will create or modify a teacher-approved script or automation task to clear temporary files, caches, or other nonessential lab-system data as part of routine system maintenance. Student groups will reflect on and document the objective, process, security considerations, and real-life application in their journals. *Unit(s) 14, 15, 16, 17, 18*
4.	Remote Messaging and File Transfer: Students will create or configure a teacher-approved application, script, or lab activity capable of sending and receiving remote messages or files in a controlled network environment. Students will document the communication method, security considerations, and appropriate use of remote access or file-transfer tools. *Unit(s) 16, 17, 18, 19, 20*
5.	Network Discovery Tool: Students will use a teacher-approved programming, scripting, or network-discovery tool to identify and visually document devices that are active or inactive on a controlled lab network. *Unit(s) 16, 17, 18, 19, 20*
6.	Network Monitoring and Suspicious Activity: Students will use approved network commands, logs, or monitoring tools in a controlled lab environment to identify suspicious network activity and document observable indicators such as IP address, MAC address when available, hostname, ports, protocols, and connection status. *Unit(s) 16, 17, 18, 19, 20*
7.	Rogue Device: Students will use approved network discovery tools, logs, and troubleshooting procedures to track and document a simulated rogue device that changes names, IP addresses, or network locations within a controlled lab environment. *Unit(s) 9, 10, 11, 16*
8.	Lost or Unauthorized Device Investigation: Students will complete a simulated lost-device or unauthorized-device investigation using teacher-approved tools, network logs, device-management information, and privacy/legal procedures. Students will document the investigative process, evidence collected, appropriate escalation steps, and recommendations for preventing future incidents. *Unit(s) 9, 10, 11, 16*

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.

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

A3.3 Recognize where processes are running in a networked environment (e.g., client access, remote access).

A3.4 Identify and describe the layered nature of computing and networking such as the Open Systems Interconnect (OSI) model.

A3.6 Describe and contrast the differences between various Internet protocols: hypertext transfer protocol (http), hypertext transfer protocol secure (https), file transfer protocol (ftp), simple mail transfer protocol (smtp).

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.

A4.2 Use a command line interface.

A4.3 Automate common tasks using macros or scripting.

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.

A8.0 Manage and implement information, technology, and communication projects.

A8.1 Develop the purpose and scope of a project.

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) *Students manage 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.