INFORMATION TECHNOLOGY-SERVICE AND SUPPORT STANDARDS

This document was prepared by:

Office of Career, Technical and Adult Education
Nevada Department of Education
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State Board for Career and Technical Education on
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CTE MISSION STATEMENT:

The Office of Career, Technical and Adult Education is dedicated to developing innovative educational opportunities for students to acquire skills for productive employment and lifelong learning.

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ACKNOWLEDGEMENTS

The development of Nevada Career and Technical standards and assessments is a collaborative effort sponsored by the Office of Career, Technical and Adult Education at the Department of Education and the Career and Technical Education Consortium of States. The Department of Education relies on teachers and industry representatives who have the technical expertise and teaching experience to develop standards and performance indicators that truly measure student skill attainment. Most important, however, is recognition of the time, expertise and great diligence provided by the writing team members in developing the Career and Technical Standards for IT-Service and Support.

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BUSINESS AND INDUSTRY VALIDATION

All CTE standards developed through the Nevada Department of Education are validated by business and industry through one or more of the following processes: (1) the standards are developed by a team consisting of business and industry representatives; or (2) a separate review panel was coordinated with industry experts to ensure the standards include the proper content; or (3) the adoption of nationally-recognized standards endorsed by business and industry.

The IT-Service and Support standards were validated with the adoption of the nationally recognized standards approved by CompTIA and Cisco Systems, Inc.

PROJECT COORDINATOR

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INTRODUCTION

The standards in this document are designed to clearly state what the student should know and be able to do upon completion of an advanced high school IT-Service and Support Standards program. These standards are designed for a three-credit course sequence that prepares the student for a technical assessment directly aligned to the standards.

These exit-level standards are designed for the student to complete all standards through their completion of a program of study. These standards are intended to guide curriculum objectives for a program of study.

The standards are organized as follows:

Content Standards are general statements that identify major areas of knowledge, understanding, and the skills students are expected to learn in key subject and career areas by the end of the program.

Performance Standards follow each content standard. Performance standards identify the more specific components of each content standard and define the expected abilities of students within each content standard.

Performance Indicators are very specific criteria statements for determining whether a student meets the performance standard. Performance indicators may also be used as learning outcomes, which teachers can identify as they plan their program learning objectives.

The crosswalk and alignment section of the document shows where the performance indicators support the English Language Arts and the Mathematics Common Core State Standards, and the Nevada State Science Standards. Where correlation with an academic standard exists, students in the IT-Service and Support Standards program perform learning activities that support, either directly or indirectly, achievement of one or more Common Core State Standards.

All students are encouraged to participate in the career and technical student organization (CTSO) that relates to their program area. CTSOs are co-curricular national associations that directly enforce learning in the CTE classroom through curriculum resources, competitive events, and leadership development. CTSOs provide students the ability to apply academic and technical knowledge, develop communication and teamwork skills, and cultivate leadership skills to ensure college and career readiness.

The Employability Skills for Career Readiness identify the “soft skills” needed to be successful in all careers, and must be taught as an integrated component of all CTE course sequences. These standards are available in a separate document.

CONTENT STANDARD 1.0 : IDENTIFY AND UTILIZE SAFETY PROCEDURES AND PROPER TOOLS	
PERFORMANCE STANDARD 1.1 : UTILIZE SAFETY PROCEDURES	
1.1.1	Demonstrate the proper use of safety devices
1.1.2	Research the environmental impact of production, use and disposal of technology materials
1.1.3	Research local, state and federal regulations related to material handling
1.1.4	Demonstrate proper disposal of technology materials
1.1.5	Describe Material Safety Data Sheets (MSDS)
1.1.6	Explain the relationship between organization and safety
1.1.7	Demonstrate an organized work environment
PERFORMANCE STANDARD 1.2 : UTILIZE INDUSTRY STANDARD TOOLS	
1.2.1	Explain common tools used in computer repair
1.2.2	Demonstrate the use of common tools
1.2.3	Select the proper tool for diagnostic and troubleshooting procedures

CONTENT STANDARD 2.0 : ASSEMBLE COMPUTER HARDWARE	
PERFORMANCE STANDARD 2.1 : CLASSIFY HARDWARE	
2.1.1	Use industry standard vocabulary
2.1.2	Describe the use of each of the classifications of hardware components
2.1.3	Categorize the various types of power supplies
2.1.4	Differentiate between the form factors of motherboards
2.1.5	Describe various levels and types of memory and storage devices
2.1.6	Classify various expansion adaptors
2.1.7	Differentiate between various CPU types and cooling types
PERFORMANCE STANDARD 2.2 : TROUBLESHOOT COMMON PROBLEMS	
2.2.1	Explain troubleshooting theory
2.2.2	Explain key terms and acronyms used in diagnostic testing and troubleshooting
2.2.3	Describe common symptoms for a given discrepancy
2.2.4	Develop a solution for a given discrepancy
2.2.5	Document the solution
PERFORMANCE STANDARD 2.3 : INSTALL AND CONFIGURE HARDWARE	
2.3.1	Select components appropriate to customer needs
2.3.2	Install key components, e.g., RAM, CPU, PSU
2.3.3	Install and configure internal peripherals, e.g., TV tuner adapter, sound cards, graphic cards
2.3.4	Install and configure external peripherals, e.g., display devices, printers, scanners

CONTENT STANDARD 3.0 : INSTALL, CONFIGURE, AND SECURE COMPUTER SOFTWARE	
PERFORMANCE STANDARD 3.1 : EVALUATE OPERATING SYSTEM (OS) SOFTWARE	
3.1.1	Use industry standard vocabulary
3.1.2	Compare and contrast Microsoft Windows Operating Systems
3.1.3	Explain various features and tools of operating systems
3.1.4	Select appropriate operating system features and tools based on customer needs
3.1.5	Install and secure operating systems
PERFORMANCE STANDARD 3.2 : TROUBLESHOOT COMMON OS PROBLEMS	
3.2.1	Explain key terms and acronyms used in diagnostic testing and troubleshooting
3.2.2	Identify common symptoms for a given discrepancy
3.2.3	Develop a solution for a given discrepancy
3.2.4	Document the solution
PERFORMANCE STANDARD 3.3 : UNDERSTAND AND UTILIZE SECURITY SETTINGS	
3.3.1	Explain the differences among various OS security settings
3.3.2	Implement best practices to secure a workstation

CONTENT STANDARD 4.0 : UNDERSTAND THE NEED FOR CUSTOMER SERVICE	
PERFORMANCE STANDARD 4.1 : COMMUNICATE EFFECTIVELY WITH CUSTOMERS	
4.1.1	Analyze customer needs by asking relevant questions
4.1.2	Address customer's concerns without using jargon, slang, or acronyms
4.1.3	Implement security best practices with customer's sensitive information and data
PERFORMANCE STANDARD 4.2 : UTILIZE APPROPRIATE DOCUMENTATION	
4.2.1	Maintain customer service log
4.2.2	Create incident reports according to policies and procedures

CONTENT STANDARD 5.0 : MAINTAIN AND SUPPORT OTHER DEVICES	
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5.1.1	Compare and contrast laptop and computer form factors
5.1.2	Explain current trends in mobile applications
5.1.3	Compare and contrast mobile operating systems
5.1.4	Explain basic features of mobile operating system
5.1.5	Establish network connectivity to configure applications
PERFORMANCE STANDARD 5.2 : INSTALL PRINTERS	
5.2.1	Explain differences among various types of printers
5.2.2	Install and configure printers
5.2.3	Perform regular printer maintenance
5.2.4	Maintain printer maintenance log

CONTENT STANDARD 6.0 : DEMONSTRATE NETWORKING CONCEPTS	
PERFORMANCE STANDARD 6.1 : DESCRIBE TYPES OF NETWORK CABLES AND CONNECTORS AND THEIR USES	
6.1.1	Evaluate network cables and connectors for appropriate use
6.1.2	Create unshielded twisted pair (UTP) cables, e.g., straight, rollover, crossover
PERFORMANCE STANDARD 6.2 : EXPLAIN TRANSITION CONTROL PROTOCOL/INTERNET PROTOCOL (TCP/IP) AND THEIR PURPOSE	
6.2.1	Define TCP/IP
6.2.2	Explain how data is transmitted over a network
6.2.3	Explain the properties and characteristics of TCP/IP
6.2.4	Create a simple network addressing scheme
6.2.5	Compare and contrast TCP/IP model and Open Systems Interconnect (OSI) model
PERFORMANCE STANDARD 6.3 : COMPARE AND CONTRAST WIRELESS NETWORKING STANDARDS	
6.3.1	Describe various wireless network standards
6.3.2	Compare and contrast authentication and encryption
6.3.3	Explain the properties of secure wireless networks
PERFORMANCE STANDARD 6.4 : EXPLAIN TOPOLOGIES AND NETWORK TYPES	
6.4.1	Describe Internet connection types and features
6.4.2	Compare and contrast Mesh, Ring, Bus, Star, Hybrid
6.4.3	Compare and contrast network types, e.g. LAN, WAN, PAN, MAN
PERFORMANCE STANDARD 6.5 : UTILIZE NETWORK DEVICES	
6.5.1	Compare and contract network devices
6.5.2	Configure network devices

CONTENT STANDARD 7.0 : IMPLEMENT SECURITY PROTOCOLS	
PERFORMANCE STANDARD 7.1 : APPLY PHYSICAL AND DIGITAL SECURITY PRACTICES	
7.1.1	Describe physical security vs. digital security
7.1.2	Secure a SOHO wireless/wired network
7.1.3	Explain key terms related to security
7.1.4	Implement best practices to secure a workstation
PERFORMANCE STANDARD 7.2 : COMPARE SECURITY THREATS	
7.2.1	Identify common security threats, e.g., virus, malware, social engineering
7.2.2	Describe methods to prevent breeches in security, e.g., pass phrase, OS patch management, disabling unused accounts

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CROSSWALK AND ALIGNMENTS OF INFORMATION TECHNOLOGY – SERVICE AND SUPPORT STANDARDS AND THE COMMON CORE STATE STANDARDS, THE NEVADA SCIENCE STANDARDS, AND THE COMMON CAREER TECHNICAL CORE STANDARDS

CROSSWALK (ACADEMIC STANDARDS)

The crosswalk of the Information Technology-Service and Support Standards shows links to the Common Core State Standards for English Language Arts and Mathematics and the Nevada Science Standards. The crosswalk identifies the performance indicators in which the learning objectives in the Information Technology-Service and Support program support academic learning. The performance indicators are grouped according to their content standard and are crosswalked to the English Language Arts and Mathematics Common Core State Standards and the Nevada Science Standards.

ALIGNMENTS (MATHEMATICAL PRACTICES)

In addition to correlation with the Common Core Mathematics Content Standards, many performance indicators support the Common Core Mathematical Practices. The following table illustrates the alignment of the Information Technology-Service and Support Standards Performance Indicators and the Common Core Mathematical Practices. This alignment identifies the performance indicators in which the learning objectives in the Information Technology-Service and Support program support academic learning.

CROSSWALK (COMMON CAREER TECHNICAL CORE)

The crosswalk of the Information Technology-Service and Support Standards shows links to the Common Career Technical Core. The crosswalk identifies the performance indicators in which the learning objectives in the Information Technology-Service and Support program support the Common Career Technical Core. The Common Career Technical Core defines what students should know and be able to do after completing instruction in a program of study. The Information Technology-Service and Support are crosswalked to the Information Technology Career Cluster™ and the Information Support & Services Career Pathway.

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CROSSWALK OF IT-SERVICE AND SUPPORT STANDARDS AND THE COMMON CORE STATE STANDARDS

CONTENT STANDARD 1.0: IDENTIFY AND UTILIZE SAFETY PROCEDURES AND PROPER TOOLS

Performance Indicators	Common Core State Standards and Nevada Science Standards
1.1.2	**English Language Arts: Writing Standards for Literacy in Science and Technical Subjects** WHST.11-12.7 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; synthesize multiple sources on the subject, demonstrating understanding of the subject under investigation. WHST.11-12.8 Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the strengths and limitations of each source in terms of the specific task, purpose, and audience; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and overreliance on any one source and following a standard format for citation.
1.1.3	**English Language Arts: Writing Standards for Literacy in Science and Technical Subjects** WHST.11-12.7 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; synthesize multiple sources on the subject, demonstrating understanding of the subject under investigation. WHST.11-12.8 Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the strengths and limitations of each source in terms of the specific task, purpose, and audience; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and overreliance on any one source and following a standard format for citation. **English Language Arts: Reading Standards for Literacy in Science and Technical Subjects** RST.11-12.9 Synthesize information from a range of sources (e.g., texts, experiments, simulations) into a coherent understanding of a process, phenomenon, or concept, resolving conflicting information when possible.
1.1.4	**English Language Arts: Writing Standards for Literacy in Science and Technical Subjects** WHST.11-12.7 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; synthesize multiple sources on the subject, demonstrating understanding of the subject under investigation. WHST.11-12.8 Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the strengths and limitations of each source in terms of the specific task, purpose, and audience; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and overreliance on any one source and following a standard format for citation. **English Language Arts: Reading Standards for Literacy in Science and Technical Subjects** RST.11-12.9 Synthesize information from a range of sources (e.g., texts, experiments, simulations) into a coherent understanding of a process, phenomenon, or concept, resolving conflicting information when possible.
1.1.6	**English Language Arts: Writing Standards for Literacy in Science and Technical Subjects** WHST.11-12.1 Write arguments focused on discipline-specific content.

CONTENT STANDARD 2.0: ASSEMBLE COMPUTER HARDWARE

Performance Indicators	Common Core State Standards and Nevada Science Standards
2.1.2	**English Language Arts: Writing Standards for Literacy in Science and Technical Subjects** WHST.11-12.2d Use precise language, domain-specific vocabulary and techniques such as metaphor, simile, and analogy to manage the complexity of the topic; convey a knowledgeable stance in a style that responds to the discipline and context as well as to the expertise of likely readers.
2.1.4	**English Language Arts: Writing Standards for Literacy in Science and Technical Subjects** WHST.11-12.1c Use words, phrases, and clauses as well as varied syntax to link the major sections of the text, create cohesion, and clarify the relationships between claim(s) and reasons, between reasons and evidence, and between claim(s) and counterclaims.
2.2.4	**English Language Arts: Reading Standards for Literacy in Science and Technical Subjects** RST.11-12.7 Integrate and evaluate multiple sources of information presented in diverse formats and media (e.g., quantitative data, video, multimedia) in order to address a question or solve a problem. **English Language Arts: Writing Standards for Literacy in Science and Technical Subjects** WHST.11-12.1 Write arguments focused on discipline-specific content. WHST.11-12.1a Introduce precise, knowledgeable claim(s), establish the significance of the claim(s), distinguish the claim(s) from alternate or opposing claims, and create an organization that logically sequences the claim(s), counterclaims, reasons, and evidence. WHST.11-12.1b Develop claim(s) and counterclaims fairly and thoroughly, supplying the most relevant data and evidence for each while pointing out the strengths and limitations of both claim(s) and counterclaims in a discipline-appropriate form that anticipates the audience's knowledge level, concerns, values, and possible biases.
2.2.5	**English Language Arts: Writing Standards for Literacy in Science and Technical Subjects** WHST.11-12.1 Write arguments focused on discipline-specific content.
2.3.2	**English Language Arts: Reading Standards for Literacy in Science and Technical Subjects** RST.11-12.3 Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks; analyze the specific results based on explanations in the text.
2.3.3	**English Language Arts: Reading Standards for Literacy in Science and Technical Subjects** RST.11-12.3 Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks; analyze the specific results based on explanations in the text.
2.3.4	**English Language Arts: Reading Standards for Literacy in Science and Technical Subjects** RST.11-12.3 Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks; analyze the specific results based on explanations in the text.

CONTENT STANDARD 3.0: INSTALL, CONFIGURE, AND SECURE COMPUTER SOFTWARE

Performance Indicators	Common Core State Standards and Nevada Science Standards
3.1.2	**English Language Arts: Writing Standards for Literacy in Science and Technical Subjects** WHST.11-12.1 Write arguments focused on discipline-specific content. WHST.11-12.1a Introduce precise, knowledgeable claim(s), establish the significance of the claim(s), distinguish the claim(s) from alternate or opposing claims, and create an organization that logically sequences the claim(s), counterclaims, reasons, and evidence. WHST.11-12.1b Develop claim(s) and counterclaims fairly and thoroughly, supplying the most relevant data and evidence for each while pointing out the strengths and limitations of both claim(s) and counterclaims in a discipline-appropriate form that anticipates the audience's knowledge level, concerns, values, and possible biases. **English Language Arts: Reading Standards for Literacy in Science and Technical Subjects** RST.11-12.8 Evaluate the hypotheses, data, analysis, and conclusions in a science or technical text, verifying the data when possible and corroborating or challenging conclusions with other sources of information. RST.11-12.9 Synthesize information from a range of sources (e.g., texts, experiments, simulations) into a coherent understanding of a process, phenomenon, or concept, resolving conflicting information when possible.
3.1.3	**English Language Arts: Speaking and Listening Standards** SL.11-12.2 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.
3.1.5	**English Language Arts: Reading Standards for Literacy in Science and Technical Subjects** RST.11-12.3 Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks; analyze the specific results based on explanations in the text.
3.2.1	**English Language Arts: Speaking and Listening Standards** SL.11-12.2 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.
3.2.3	**English Language Arts: Reading Standards for Literacy in Science and Technical Subjects** RST.11-12.8 Evaluate the hypotheses, data, analysis, and conclusions in a science or technical text, verifying the data when possible and corroborating or challenging conclusions with other sources of information. RST.11-12.9 Synthesize information from a range of sources (e.g., texts, experiments, simulations) into a coherent understanding of a process, phenomenon, or concept, resolving conflicting information when possible. **English Language Arts: Writing Standards for Literacy in Science and Technical Subjects** WHST.11-12.1 Write arguments focused on discipline-specific content. WHST.11-12.1a Introduce precise, knowledgeable claim(s), establish the significance of the claim(s), distinguish the claim(s) from alternate or opposing claims, and create an organization that logically sequences the claim(s), counterclaims, reasons, and evidence. WHST.11-12.1b Develop claim(s) and counterclaims fairly and thoroughly, supplying the most relevant data and evidence for each while pointing out the strengths and limitations of both claim(s) and counterclaims in a discipline-appropriate form that anticipates the audience's knowledge level, concerns, values, and possible biases.

3.3.1	**English Language Arts: Speaking and Listening Standards** SL.11-12.2 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. **English Language Arts: Writing Standards for Literacy in Science and Technical Subjects** WHST.11-12.1 Write arguments focused on discipline-specific content. WHST.11-12.1a Introduce precise, knowledgeable claim(s), establish the significance of the claim(s), distinguish the claim(s) from alternate or opposing claims, and create an organization that logically sequences the claim(s), counterclaims, reasons, and evidence. WHST.11-12.1b Develop claim(s) and counterclaims fairly and thoroughly, supplying the most relevant data and evidence for each while pointing out the strengths and limitations of both claim(s) and counterclaims in a discipline-appropriate form that anticipates the audience's knowledge level, concerns, values, and possible biases.

CONTENT STANDARD 4.0: UNDERSTAND THE NEED FOR CUSTOMER SERVICE

Performance Indicators	Common Core State Standards and Nevada Science Standards
4.1.1	**English Language Arts: Speaking and Listening Standards** SL.11-12.1c Propel conversations by posing and responding to questions that probe reasoning and evidence; ensure a hearing for a full range of positions on a topic or issue; clarify, verify, or challenge ideas and conclusions; and promote divergent and creative perspectives. SL.11-12.3 Evaluate a speaker's point of view, reasoning, and use of evidence and rhetoric, assessing the stance, premises, links among ideas, word choice, points of emphasis, and tone used.
4.1.2	**English Language Arts: Speaking and Listening Standards** SL.11-12.4 Present information, findings, and supporting evidence, conveying a clear and distinct perspective, such that listeners can follow the line of reasoning, alternative or opposing perspectives are addressed, and the organization, development, substance, and style are appropriate to purpose, audience, and a range of formal and informal tasks. SL.11-12.6 Adapt speech to a variety of contexts and tasks, demonstrating a command of formal English when indicated or appropriate. (See grades 11–12 Language standards 1 and 3 on page 54 for specific expectations.)
4.2.1	**English Language Arts: Writing Standards for Literacy in Science and Technical Subjects** WHST.11-12.2d Use precise language, domain-specific vocabulary and techniques such as metaphor, simile, and analogy to manage the complexity of the topic; convey a knowledgeable stance in a style that responds to the discipline and context as well as to the expertise of likely readers. WHST.11-12.4 Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.
4.2.2	**English Language Arts: Writing Standards for Literacy in Science and Technical Subjects** WHST.11-12.2 Write informative/explanatory texts, including the narration of historical events, scientific procedures/ experiments, or technical processes. WHST.11-12.4 Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.

CONTENT STANDARD 5.0: MAINTAIN AND SUPPORT OTHER DEVICES

Performance Indicators	Common Core State Standards and Nevada Science Standards
5.1.2	**English Language Arts: Writing Standards for Literacy in Science and Technical Subjects** WHST.11-12.4 Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience. **English Language Arts: Reading Standards for Literacy in Science and Technical Subjects** RST.11-12.7 Integrate and evaluate multiple sources of information presented in diverse formats and media (e.g., quantitative data, video, multimedia) in order to address a question or solve a problem. RST.11-12.8 Evaluate the hypotheses, data, analysis, and conclusions in a science or technical text, verifying the data when possible and corroborating or challenging conclusions with other sources of information.
5.1.3	**English Language Arts: Writing Standards for Literacy in Science and Technical Subjects** WHST.11-12.2 Write informative/explanatory texts, including the narration of historical events, scientific procedures/ experiments, or technical processes. **English Language Arts: Reading Standards for Literacy in Science and Technical Subjects** RST.11-12.7 Integrate and evaluate multiple sources of information presented in diverse formats and media (e.g., quantitative data, video, multimedia) in order to address a question or solve a problem. RST.11-12.8 Evaluate the hypotheses, data, analysis, and conclusions in a science or technical text, verifying the data when possible and corroborating or challenging conclusions with other sources of information.
5.1.4	**English Language Arts: Writing Standards for Literacy in Science and Technical Subjects** WHST.11-12.2d Use precise language, domain-specific vocabulary and techniques such as metaphor, simile, and analogy to manage the complexity of the topic; convey a knowledgeable stance in a style that responds to the discipline and context as well as to the expertise of likely readers. WHST.11-12.4 Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience. **English Language Arts: Reading Standards for Literacy in Science and Technical Subjects** RST.11-12.4 Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to grades 11–12 texts and topics.
5.2.1	**English Language Arts: Writing Standards for Literacy in Science and Technical Subjects** WHST.11-12.4 Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.
5.2.2	**English Language Arts: Reading Standards for Literacy in Science and Technical Subjects** RST.11-12.3 Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks; analyze the specific results based on explanations in the text.
5.2.3	**English Language Arts: Reading Standards for Literacy in Science and Technical Subjects** RST.11-12.3 Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks; analyze the specific results based on explanations in the text.

CONTENT STANDARD 6.0: DEMONSTRATE NETWORKING CONCEPTS

Performance Indicators	Common Core State Standards and Nevada Science Standards
6.1.2	**English Language Arts: Reading Standards for Literacy in Science and Technical Subjects** RST.11-12.3 Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks; analyze the specific results based on explanations in the text.
6.2.2	**English Language Arts: Speaking and Listening Standards** SL.11-12.2 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. SL.11-12.4 Present information, findings, and supporting evidence, conveying a clear and distinct perspective, such that listeners can follow the line of reasoning, alternative or opposing perspectives are addressed, and the organization, development, substance, and style are appropriate to purpose, audience, and a range of formal and informal tasks.
6.2.3	**English Language Arts: Speaking and Listening Standards** SL.11-12.2 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. SL.11-12.4 Present information, findings, and supporting evidence, conveying a clear and distinct perspective, such that listeners can follow the line of reasoning, alternative or opposing perspectives are addressed, and the organization, development, substance, and style are appropriate to purpose, audience, and a range of formal and informal tasks.
6.2.4	**English Language Arts: Speaking and Listening Standards** SL.11-12.3 Evaluate a speaker's point of view, reasoning, and use of evidence and rhetoric, assessing the stance, premises, links among ideas, word choice, points of emphasis, and tone used.
6.2.5	**English Language Arts: Reading Standards for Literacy in Science and Technical Subjects** RST.11-12.4 Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to grades 11–12 texts and topics. RST.11-12.7 Integrate and evaluate multiple sources of information presented in diverse formats and media (e.g., quantitative data, video, multimedia) in order to address a question or solve a problem. RST.11-12.8 Evaluate the hypotheses, data, analysis, and conclusions in a science or technical text, verifying the data when possible and corroborating or challenging conclusions with other sources of information. **English Language Arts: Writing Standards for Literacy in Science and Technical Subjects** WHST.11-12.1c Use words, phrases, and clauses as well as varied syntax to link the major sections of the text, create cohesion, and clarify the relationships between claim(s) and reasons, between reasons and evidence, and between claim(s) and counterclaims.
6.3.1	**English Language Arts: Speaking and Listening Standards** SL.11-12.2 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.

6.3.2	**English Language Arts: Reading Standards for Literacy in Science and Technical Subjects** RST.11-12.4 Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to grades 11–12 texts and topics. RST.11-12.7 Integrate and evaluate multiple sources of information presented in diverse formats and media (e.g., quantitative data, video, multimedia) in order to address a question or solve a problem. RST.11-12.8 Evaluate the hypotheses, data, analysis, and conclusions in a science or technical text, verifying the data when possible and corroborating or challenging conclusions with other sources of information. **English Language Arts: Writing Standards for Literacy in Science and Technical Subjects** WHST.11-12.1c Use words, phrases, and clauses as well as varied syntax to link the major sections of the text, create cohesion, and clarify the relationships between claim(s) and reasons, between reasons and evidence, and between claim(s) and counterclaims.
6.3.3	**English Language Arts: Speaking and Listening Standards** SL.11-12.2 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. SL.11-12.4 Present information, findings, and supporting evidence, conveying a clear and distinct perspective, such that listeners can follow the line of reasoning, alternative or opposing perspectives are addressed, and the organization, development, substance, and style are appropriate to purpose, audience, and a range of formal and informal tasks.
6.4.1	**English Language Arts: Writing Standards for Literacy in Science and Technical Subjects** WHST.11-12.4 Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.
6.4.2	**English Language Arts: Reading Standards for Literacy in Science and Technical Subjects** RST.11-12.4 Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to grades 11–12 texts and topics. RST.11-12.7 Integrate and evaluate multiple sources of information presented in diverse formats and media (e.g., quantitative data, video, multimedia) in order to address a question or solve a problem. RST.11-12.8 Evaluate the hypotheses, data, analysis, and conclusions in a science or technical text, verifying the data when possible and corroborating or challenging conclusions with other sources of information. **English Language Arts: Writing Standards for Literacy in Science and Technical Subjects** WHST.11-12.1c Use words, phrases, and clauses as well as varied syntax to link the major sections of the text, create cohesion, and clarify the relationships between claim(s) and reasons, between reasons and evidence, and between claim(s) and counterclaims.

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6.5.1	**English Language Arts: Reading Standards for Literacy in Science and Technical Subjects** RST.11-12.4 Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to grades 11–12 texts and topics. RST.11-12.7 Integrate and evaluate multiple sources of information presented in diverse formats and media (e.g., quantitative data, video, multimedia) in order to address a question or solve a problem. RST.11-12.8 Evaluate the hypotheses, data, analysis, and conclusions in a science or technical text, verifying the data when possible and corroborating or challenging conclusions with other sources of information. **English Language Arts: Writing Standards for Literacy in Science and Technical Subjects** WHST.11-12.1c Use words, phrases, and clauses as well as varied syntax to link the major sections of the text, create cohesion, and clarify the relationships between claim(s) and reasons, between reasons and evidence, and between claim(s) and counterclaims.
6.5.2	**English Language Arts: Reading Standards for Literacy in Science and Technical Subjects** RST.11-12.3 Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks; analyze the specific results based on explanations in the text.

CONTENT STANDARD 7.0: IMPLEMENT SECURITY PROTOCOLS

Performance Indicators	Common Core State Standards and Nevada Science Standards
7.1.1	**English Language Arts: Speaking and Listening Standards** SL.11-12.4 Present information, findings, and supporting evidence, conveying a clear and distinct perspective, such that listeners can follow the line of reasoning, alternative or opposing perspectives are addressed, and the organization, development, substance, and style are appropriate to purpose, audience, and a range of formal and informal tasks. **English Language Arts: Writing Standards for Literacy in Science and Technical Subjects** WHST.11-12.2 Write informative/explanatory texts, including the narration of historical events, scientific procedures/ experiments, or technical processes. WHST.11-12.4 Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.
7.1.2	**English Language Arts: Reading Standards for Literacy in Science and Technical Subjects** RST.11-12.3 Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks; analyze the specific results based on explanations in the text.
7.1.4	**English Language Arts: Reading Standards for Literacy in Science and Technical Subjects** RST.11-12.3 Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks; analyze the specific results based on explanations in the text.
7.2.2	**English Language Arts: Speaking and Listening Standards** SL.11-12.4 Present information, findings, and supporting evidence, conveying a clear and distinct perspective, such that listeners can follow the line of reasoning, alternative or opposing perspectives are addressed, and the organization, development, substance, and style are appropriate to purpose, audience, and a range of formal and informal tasks. **English Language Arts: Writing Standards for Literacy in Science and Technical Subjects** WHST.11-12.2 Write informative/explanatory texts, including the narration of historical events, scientific procedures/ experiments, or technical processes. WHST.11-12.2d Use precise language, domain-specific vocabulary and techniques such as metaphor, simile, and analogy to manage the complexity of the topic; convey a knowledgeable stance in a style that responds to the discipline and context as well as to the expertise of likely readers. WHST.11-12.4 Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.

ALIGNMENT OF IT-SERVICE AND SUPPORT STANDARDS AND THE COMMON CORE MATHEMATICAL PRACTICES

Common Core Mathematical Practices	IT Service and Support Performance Indicators
1. Make sense of problems and persevere in solving them.	2.2.4 3.2.3
2. Reason abstractly and quantitatively.	2.2.4 3.2.3
3. Construct viable arguments and critique the reasoning of others.	
4. Model with mathematics.	
5. Use appropriate tools strategically.	
6. Attend to precision.	
7. Look for and make use of structure.	
8. Look for and express regularity in repeated reasoning.	

Crosswalks of Information Technology-Service and Support Standards and the Common Career Technical Core

Information Technology Career Cluster™ (IT)	Performance Indicators
1. Demonstrate effective professional communication skills and practices that enable positive customer relationships.	4.1.1-4.1.3 4.2.1, 4.2.2
2. Use product or service design processes and guidelines to produce a quality information technology (IT) product or service.	2.3.1-2.3.4 3.1.4, 3.1.5 5.1.1-5.1.5
3. Demonstrate the use of cross-functional teams in achieving IT project goals.	
4. Demonstrate positive cyber citizenry by applying industry accepted ethical practices and behaviors.	
5. Explain the implications of IT on business development.	
6. Describe trends in emerging and evolving computer technologies and their influence on IT practices.	5.1.2
7. Perform standard computer backup and restore procedures to protect IT information.	
8. Recognize and analyze potential IT security threats to develop and maintain security requirements.	3.3.1, 3.3.2; 4.1.3 7.1.3-7.1.4; 7.2.1, 7.2.2
9. Describe quality assurance practices and methods employed in producing and providing quality IT products and services.	
10. Describe the use of computer forensics to prevent and solve information technology crimes and security breaches.	
11. Demonstrate knowledge of the hardware components associated with information systems.	1.2.1-1.2.3; 2.1.1-2.1.7 2.3.1-2.3.4; 5.2.1, 5.2.2
12. Compare key functions and applications of software and determine maintenance strategies for computer systems.	3.1.1-3.1.5

Information Support & Services Career Pathway (IT-SUP)	Performance Indicators
1. Provide technology support to maintain service.	2.1.1-2.1.7; 2.3.1-2.3.4 5.2.3
2. Manage operating systems and software applications, including maintenance of upgrades, patches and service packs.	3.1.1-3.1.5; 3.2.1-3.2.4 3.3.1-3.3.2
3. Apply appropriate troubleshooting techniques in resolving computer hardware, software and configuration problems.	2.2.1-2.2.5; 3.2.1-3.2.4
4. Perform installation, configuration and maintenance of operating systems.	3.1.1-3.1.5; 3.2.1-3.2.4 3.3.1-3.3.2

5. Demonstrate the use of networking concepts to develop a network.	6.1.1, 6.1.2; 6.2.1-6.2.5 6.3.1-6.3.3; 6.4.1-6.4.3 6.5.1, 6.5.2
6. Evaluate the effectiveness of an information system.	6.1.1
7. Employ system installation and maintenance skills to setup and maintain an information system.	2.3.1-2.3.4; 3.1.5 5.1.5; 5.2.4; 6.5.2
8. Employ system administration and control skills to monitor the performance of an information system.	
9. Employ technical writing and documentation skills in support of an information system.	4.2.1, 4.2.2
10. Apply quality assurance processes to maximize information system operation.	