FIRE SCIENCE STANDARDS

This document was prepared by:

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NEVADA STATE BOARD FOR CAREER AND TECHNICAL EDUCATION

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.

NEVADA DEPARTMENT OF EDUCATION

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ACKNOWLEDGEMENTS

The development of the 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 Fire Science.

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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 Fire Science standards were validated through the active participation by business and industry on the development team. The Fire Science standards were also validated with the adoption of the Nevada State Fire Marshalls entry level firefighting requirements.

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 Fire Science 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 Mathematics Common Core State Standards, and the Nevada State Science Standards. Where correlation with an academic standard exists, students in the Fire Science 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 : RELATE ACADEMIC FOUNDATIONS TO ACHIEVE SKILL REQUIREMENT	
PERFORMANCE STANDARD 1.1 : APPLY CONCEPTS OF LANGUAGE ARTS KNOWLEDGE	
1.1.1	Model behaviors that demonstrate active listening
1.1.2	Organize oral and written information
1.1.3	Adapt language for audience, purpose and situation
1.1.4	Evaluate oral and written information for accuracy, expression, adequacy, clarity and validity
1.1.5	Predict potential outcomes and/or solutions
1.1.6	Present formal and informal speeches, as related to the hiring process and public relations
PERFORMANCE STANDARD 1.2 : APPLY CONCEPTS OF MATHEMATICS KNOWLEDGE	
1.2.1	Identify whole number, decimals and fractions
1.2.2	Demonstrate knowledge of arithmetic operations
1.2.3	Formulate data and measurements to solve a problem
1.2.4	Analyze mathematical problem statements
1.2.5	Construct charts/tables/graphs from functions and data
1.2.6	Critique data when interpreting operational documents
PERFORMANCE STANDARD 1.3 : APPLY CONCEPTS OF SCIENCE KNOWLEDGE	
1.3.1	Evaluate scientific constructs including conclusions, conflicting data, controls, sources of error and variables
1.3.2	Apply scientific method in qualitative and quantitative analysis
1.3.3	Recognize elements and their various states of matter
1.3.4	Describe the fire tetrahedron
1.3.5	Describe transmission of heat
1.3.6	Explain various states of “fuel”
1.3.7	Outline the classification of fire – A, B, C, D, K
1.3.8	Explain the phases of fire growth
1.3.9	Describe factors that affect fire development
1.3.10	Describe fire control theory

CONTENT STANDARD 2.0 : DEMONSTRATE THE USE OF COMMUNICATION	
PERFORMANCE STANDARD 2.1 : SELECT AND EMPLOY APPROPRIATE READING AND COMMUNICATION STRATEGIES	
2.1.1	Identify the use of content, technical concepts and vocabulary for analyzing information
2.1.2	Assess the reading strategy needed to fully comprehend a written document
2.1.3	Interpret information, data and observations for application
2.1.4	Transcribe information, data and apply information
2.1.5	Communicate information to actual practice
PERFORMANCE STANDARD 2.2 : ENHANCE DIVERSITY TO ENHANCE SKILLS	
2.2.1	Apply factors and strategies for communicating with diverse workforce
2.2.2	Demonstrate ability to communicate and resolve conflicts through various communication methods
PERFORMANCE STANDARD 2.3 : CREATE VERBAL AND NONVERBAL BEHAVIORS	
2.3.1	Interpret verbal behaviors when communicating with clients and coworkers
2.3.2	Interpret nonverbal behaviors when communicating with clients and coworkers
2.3.3	Respond with restatement and clarification techniques
2.3.4	Exhibit public relations skill

CONTENT STANDARD 3.0 : DEMONSTRATE PROBLEM SOLVING AND CRITICAL THINKING	
PERFORMANCE STANDARD 3.1 : UTILIZE CRITICAL THINKING SKILLS INDEPENDENTLY AND AS A TEAM	
3.1.1	Identify common tasks that require problem solving
3.1.2	Analyze elements of a problem to develop solutions
3.1.3	Identify alternatives using problem solving and critical thinking skills
PERFORMANCE STANDARD 3.2 : EMPLOY INTERPERSONAL SKILLS TO RESOLVE CONFLICTS	
3.2.1	Analyze situations and behaviors that affect conflict management
3.2.2	Determine outcomes and options
3.2.3	Identify and implement the various stress management techniques
PERFORMANCE STANDARD 3.3 : MONITOR WORKPLACE PERFORMANCE GOALS	
3.3.1	Develop realistic performance goals, objectives and action plans
3.3.2	Synthesize goals and adjust as necessary
3.3.3	Recognize achievement and use appropriate rewards in the workplace
PERFORMANCE STANDARD 3.4 : CONDUCT TECHNICAL RESEARCH	
3.4.1	Align information gathered to meet the needs of the audience
3.4.2	Gather technical information using a variety of resources to solve a problem
3.4.3	Evaluate information and data to prove the value of research

CONTENT STANDARD 4.0: USE OF INFORMATION TECHNOLOGY TOOLS	
PERFORMANCE STANDARD 4.1 : DIFFERENTIATE BETWEEN VARIOUS ELECTRONIC TASKS	
4.1.1	Use personal information management applications to increase workplace efficiency
4.1.2	Apply technological tools to expedite workflow
4.1.3	Operate electronic mail application to communicate
4.1.4	Critique internet applications to perform workplace tasks
4.1.5	Differentiate writing and publishing applications to prepare department communications
PERFORMANCE STANDARD 4.2 : ORGANIZE AND MANIPULATE TASKS	
4.2.1	Create computer based applications
4.2.2	Access support as needed to maintain operations
4.2.3	Manage and compress files for efficiency
4.2.4	Facilitate group work through delegation and management
4.2.5	Manage interrelated data elements
4.2.6	Perform calculations and analyses using spreadsheets

CONTENT STANDARD 5.0 : IDENTIFY KEY ORGANIZATIONAL SYSTEMS	
PERFORMANCE STANDARD 5.1 : DESCRIBE THE SCOPE OF DEPARTMENTAL ORGANIZATIONS	
5.1.1	Differentiate the types and functions of the different organizations in the fire service
5.1.2	Explain the interactions between the different organizations in the fire service
5.1.3	Explain fire service history
5.1.4	Describe the fire service mission and organization
5.1.5	Identify career tracks within the fire service
5.1.6	Complete National Incident Management System (NIMS) and Incident Command System (ICS) 100, 200, 700.
PERFORMANCE STANDARD 5.2 : IMPLEMENT QUALITY CONTROL SYSTEMS AND PRACTICES	
5.2.1	Create quality control standards and practices
5.2.2	Use national and statewide standards for quality control

CONTENT STANDARD 6.0 :	UNDERSTAND THE IMPORTANCE OF HEALTH, SAFETY AND THE ENVIRONMENT
PERFORMANCE STANDARD 6.1 :	**IMPLEMENT PERSONAL AND DEPARTMENTAL SAFETY REGULATIONS**
6.1.1	Assess workplace conditions with regard to safety and health
6.1.2	Identify safety hazards
6.1.3	Select appropriate personal protective equipment
6.1.4	Employ safety hierarchy and communication systems
6.1.5	Implement safety precautions to maintain safe workplace
6.1.6	Maintain an adequate level of health and wellness
6.1.7	Demonstrate the care of personal protective equipment (PPE)
6.1.8	Demonstrate donning and doffing of personal protective equipment within one minute
6.1.9	Identify the components of a self-contained breathing apparatus (SCBA)
6.1.10	Describe respiratory hazards and when an SCBA shall be "used" (IDLH) immediately dangerous to life and health
6.1.11	Practice donning and doffing SCBA within one minute
6.1.12	Explain principles of air management consistent with NFPA 1404
6.1.13	Demonstrate replacement of SCBA air cylinders
PERFORMANCE STANDARD 6.2 :	**EMPLOYEE RIGHTS AND RESPONSIBILITIES**
6.2.1	Identify rules, laws and governing bodies designed to promote safety and health
6.2.2	Provide rationale for laws, regulations and rules
PERFORMANCE STANDARD 6.3 :	**EMPLOY EMERGENCY PROCEDURES AND DISASTER RESPONSE PLANS**
6.3.1	Complete an EMR (Emergency Medical Responder) program or complete First Aid and CPR training that meets the requirements of the American Heart Association (AHA)
6.3.2	Create a safety equipment training plan
6.3.3	Assess emergency and/or disaster situations
6.3.4	Design an emergency or disaster plan
6.3.5	Describe fire extinguisher rating systems
6.3.6	Use a portable fire extinguisher safely; pull, aim, squeeze and sweep (PASS) method of application
6.3.7	Explain how to inspect a portable fire extinguisher
6.3.8	Complete a hazardous material operations course

CONTENT STANDARD 7.0 : UNDERSTAND THE IMPORTANCE OF ETHICS AND LEGAL RESPONSIBILITIES	
PERFORMANCE STANDARD 7.1 : APPLY ETHICAL REASONING TO WORKPLACE SITUATIONS	
7.1.1	Understand legal responsibilities and employer policies
7.1.2	Identify personal and long-term workplace consequences for unethical behaviors
7.1.3	Create a plan to deal with legal and ethical considerations
PERFORMANCE STANDARD 7.2 : INTERPRET WRITTEN AGENCY POLICIES AND PROCEDURES	
7.2.1	Review departmental policies and procedures
7.2.2	Discuss the effect of policies and procedures on a specific work situation
7.2.3	Create standard operating procedures for a department or agency
7.2.4	Compare annual firefighter injuries and fatalities
7.2.5	Identify safety standards related to fire services, such as National Fire Protection Association (NFPA) 1500 and Occupational Safety and Health Administration. (OSHA)

CONTENT STANDARD 8.0 : DEMONSTRATE FIRE SUPPRESSION TACTICS AND EQUIPMENT	
PERFORMANCE STANDARD 8.1 : EMPLOY WATER SUPPLY THEORY	
8.1.1	Describe sources of water supplies and water theory
8.1.2	Explain different means of moving water, including friction loss, appliances and fire service hose
8.1.3	Describe fire hose damage and general care
8.1.4	Describe suppressing class A, B, C, D and K fires
PERFORMANCE STANDARD 8.2 : UNDERSTAND CONCEPTS OF COMPANY OPERATIONS	
8.2.1	Compare in order tactical priorities
8.2.2	Describe engine, ladder and rescue company functions on fires
8.2.3	Describe the reasons for fire ground ventilation
8.2.4	Define the proper procedures and care for fire service ground ladders
8.2.5	Describe the reasons and types of forcible entry
8.2.6	Describe the reasons and types of salvage operations
PERFORMANCE STANDARD 8.3 : APPLY CONCEPTS OF ADDITIONAL TACTICS AND TECHNIQUES	
8.3.1	Complete National Wildfire Coordination Group (NWCG), S130, S190, L180 or equivalent (wildland firefighting)
8.3.2	Describe the reasons for vehicle extrication
8.3.3	Apply the concepts of live fire training (when possible)
8.3.4	Complete a Technical Rescue Awareness class per Nevada State Fire Marshall (NVSFM)
8.3.5	Meet requirements to sign off as completed from the Firefighter Manipulative Skills Manual as required by NVSFM/NFPA

CONTENT STANDARD 9.0 : UNDERSTAND WILDLAND FIRE BEHAVIOR AND SUPPRESSION	
PERFORMANCE STANDARD 9.1 : APPLY CONCEPTS OF BASIC FIRE BEHAVIOR	
9.1.1	Identify and discuss the fire triangle, as it pertains to wildland fires
9.1.2	Analyze the environmental factors of fuel, weather and topography that affect the spread of wildland fires
9.1.3	Connect the contributing factors that indicate the potential for increased fire behavior and compromised safety
9.1.4	Describe causes of extreme fire behavior (long range spotting, crowning and fire whirls) due to weather, fuels, topography or S290 online
PERFORMANCE STANDARD 9.2 : APPLY CONCEPTS OF BASIC WILDLAND FIRE SUPPRESSION	
9.2.1	Explain the LCES (Lookouts Communications Escape Routes and Safety Zones) and how it relates to standard firefighting orders
9.2.2	Apply concepts of fireline construction to proper standards, applying various methods
9.2.3	Demonstrate the holding actions on a fireline, using various methods
9.2.4	Discuss fire suppression techniques with the use of water
9.2.5	Discuss fire suppression techniques without the use of water
9.2.6	Complete all assigned tasks in regards to basic wildland fire suppression in a safe and efficient manner
9.2.7	Describe environmental factors that could impact firefighter safety
9.2.8	Students will demonstrate an understanding of their responsibilities to address human performance issues, so they can integrate more effectively into crews/teams operating in high risk dynamic work environments (L180)

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CROSSWALK AND ALIGNMENTS OF FIRE SCIENCE 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 Fire Science Standards shows links to the Common Core State Standards and identifies the performance indicators in which the learning objectives in the Fire Science 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 Nevada State Science Standards.

ALIGNMENTS (MATHEMATICAL PRACTICES)

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

CROSSWALK (COMMON CAREER TECHNICAL CORE)

The crosswalk of the Fire Science Standards shows links to the Common Career Technical Core. The crosswalk identifies the performance indicators in which the learning objectives in the Fire Science 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 Fire Science Standards are crosswalked to the Law, Public Safety, Corrections & Security Career Cluster™ and the Emergency and Fire Management Services Career Pathway.

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CROSSWALK OF FIRE SCIENCE STANDARDS AND THE COMMON CORE STATE STANDARDS

CONTENT STANDARD 1.0: RELATE ACADEMIC FOUNDATIONS TO ACHIEVE SKILL REQUIREMENT

Performance Indicators	Common Core State Standards and Nevada Science Standards
1.1.3	**English Language Arts: Speaking and Listening Standards** 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.)
1.3.1	**Science: Nature of Science** N.12.A.2 Students know scientists maintain a permanent record of procedures, data, analyses, decisions, and understandings of scientific investigations.
1.3.2	**Science: Nature of Science** N.12.A.2 Students know scientists maintain a permanent record of procedures, data, analyses, decisions, and understandings of scientific investigations. N.12.A.4 Students know how to safely conduct an original scientific investigation using the appropriate tools and technology.
1.3.3	**Science: Physical Science** P.12.A.1 Students know different molecular arrangements and motions account for the different physical properties of solids, liquids, and gases.
1.3.4	**Science: Physical Science** P.12.A.5 Students know chemical reactions can take place at different rates, depending on a variety of factors (i.e. temperature, concentration, surface area, and agitation).
1.3.6	**Science: Physical Science** P.12.A.1 Students know different molecular arrangements and motions account for the different physical properties of solids, liquids, and gases.
1.3.8	**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.
1.3.10	**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.

CONTENT STANDARD 2.0: DEMONSTRATE THE USE OF COMMUNICATION

Performance Indicators	Common Core State Standards and Nevada Science Standards
2.1.2	**English Language Arts: Reading Standards for Literacy in Science and Technical Subjects** RST.11-12.2 Determine the central ideas or conclusions of a text; summarize complex concepts, processes, or information presented in a text by paraphrasing them in simpler but still accurate terms.
2.1.4	**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.
2.2.1	**English Language Arts: Speaking and Listening Standards** SL.11-12.1d 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 task. 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.
2.2.2	**English Language Arts: Speaking and Listening Standards** SL.11-12.1d 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 task.
2.3.1	**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.

CONTENT STANDARD 3.0: DEMONSTRATE PROBLEM SOLVING AND CRITICAL THINKING

Performance Indicators	Common Core State Standards and Nevada Science Standards
3.1.3	**English Language Arts: Speaking and Listening Standards** SL.11-12.1b Work with peers to promote civil, democratic discussions and decision-making, set clear goals and deadlines, and establish individual roles as needed. 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.
3.2.1	**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.
3.2.2	**English Language Arts: Speaking and Listening Standards** SL.11-12.1b Work with peers to promote civil, democratic discussions and decision-making, set clear goals and deadlines, and establish individual roles as needed. SL.11-12.1d 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 task. 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.11-12.2e Provide a concluding statement or section that follows from and supports the information or explanation provided (e.g., articulating implications or the significance of the topic).
3.3.1	**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.

3.4.1	**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.
3.4.2	**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.
3.4.3	**English Language Arts: Reading Standards for Literacy in Science and Technical Subjects** RST.11-12.1 Cite specific textual evidence to support analysis of science and technical texts, attending to important distinctions the author makes and to any gaps or inconsistencies in the account. 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. 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. **English Language Arts: Writing Standards for Literacy in Science and Technical Subjects** 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. 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.

CONTENT STANDARD 4.0: USE OF INFORMATION TECHNOLOGY TOOLS

Performance Indicators	Common Core State Standards and Nevada Science Standards
4.1.4	**English Language Arts: Writing Standards for Literacy in Science and Technical Subjects** WHST.11-12.6 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.
4.1.5	**English Language Arts: Writing Standards for Literacy in Science and Technical Subjects** WHST.11-12.6 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.

CONTENT STANDARD 5.0: IDENTIFY KEY ORGANIZATIONAL SYSTEMS

Performance Indicators	Common Core State Standards and Nevada Science Standards
5.1.1	**English Language Arts: Writing Standards for Literacy in Science and Technical Subjects** 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. WHST.11-12.9 Draw evidence from informational texts to support analysis, reflection, and research.

CONTENT STANDARD 6.0: UNDERSTAND THE IMPORTANCE OF HEALTH, SAFETY AND THE ENVIRONMENT

Performance Indicators	Common Core State Standards and Nevada Science Standards
6.2.2	**English Language Arts: Writing Standards for Literacy in Science and Technical Subjects** 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. WHST.11-12.2c Use varied transitions and sentence structures to link the major sections of the text, create cohesion, and clarify the relationships among complex ideas and concepts. 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. **English Language Arts: Reading Standards for Literacy in Science and Technical Subjects** RST.11-12.1 Cite specific textual evidence to support analysis of science and technical texts, attending to important distinctions the author makes and to any gaps or inconsistencies in the account. RST.11-12.2 Determine the central ideas or conclusions of a text; summarize complex concepts, processes, or information presented in a text by paraphrasing them in simpler but still accurate terms.
6.3.2	**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. WHST.11-12.6 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.
6.3.3	**English Language Arts: Writing Standards for Literacy in Science and Technical Subjects** WHST.11-12.9 Draw evidence from informational texts to support analysis, reflection, and research.
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6.3.7	**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

CONTENT STANDARD 7.0: UNDERSTAND THE IMPORTANCE OF ETHICS AND LEGAL RESPONSIBILITIES

Performance Indicators	Common Core State Standards and Nevada Science Standards
7.1.3	**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. WHST.11-12.2b Develop the topic thoroughly by selecting the most significant and relevant facts, extended definitions, concrete details, quotations, or other information and examples appropriate to the audience's knowledge of the topic. WHST.11-12.4 Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience. WHST.11-12.6 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.
7.2.2	**English Language Arts: Speaking and Listening Standards** SL.11-12.1 Initiate and participate effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grades 11–12 topics, texts, and issues, building on others' ideas and expressing their own clearly and persuasively. SL.11-12.1a Come to discussions prepared, having read and researched material under study; explicitly draw on that preparation by referring to evidence from texts and other research on the topic or issue to stimulate a thoughtful, well reasoned exchange of ideas. 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.
7.2.3	**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. 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.

CONTENT STANDARD 8.0: DEMONSTRATE FIRE SUPPRESSION TACTICS AND EQUIPMENT

Performance Indicators	Common Core State Standards and Nevada Science Standards
8.1.1	**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. **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.
8.1.2	**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: 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.
8.2.1	**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. **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.
8.2.3	**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.
8.2.5	**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.11-12.4 Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience. 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.

8.2.6	**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.11-12.4 Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience. 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.
8.3.2	**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.

CONTENT STANDARD 9.0: UNDERSTAND WILDLAND FIRE BEHAVIOR AND SUPPRESSION

Performance Indicators	Common Core State Standards and Nevada Science Standards
9.1.1	**English Language Arts: Speaking and Listening Standards** SL.11-12.1 Initiate and participate effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grades 11–12 topics, texts, and issues, building on others' ideas and expressing their own clearly and persuasively. SL.11-12.1a Come to discussions prepared having read and researched material under study; explicitly draw on that preparation by referring to evidence from texts and other research on the topic or issue to stimulate a thoughtful, well reasoned exchange of ideas.
9.1.2	**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.11-12.9 Draw evidence from informational texts to support analysis, reflection, and research. **Science: Earth and Space** E.12.A.2 Students know the Sun is the major source of Earth's energy, and provides the energy driving Earth's weather and climate.
9.1.3	**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.11-12.9 Draw evidence from informational texts to support analysis, reflection, and research.
9.1.4	**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.
9.2.4	**English Language Arts: Speaking and Listening Standards** SL.11-12.1 Initiate and participate effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grades 11–12 topics, texts, and issues, building on others' ideas and expressing their own clearly and persuasively. SL.11-12.1a Come to discussions prepared, having read and researched material under study; explicitly draw on that preparation by referring to evidence from texts and other research on the topic or issue to stimulate a thoughtful, well reasoned exchange of ideas.
9.2.5	**English Language Arts: Speaking and Listening Standards** SL.11-12.1 Initiate and participate effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grades 11–12 topics, texts, and issues, building on others' ideas and expressing their own clearly and persuasively. SL.11-12.1a Come to discussions prepared, having read and researched material under study; explicitly draw on that preparation by referring to evidence from texts and other research on the topic or issue to stimulate a thoughtful, well reasoned exchange of ideas.

9.2.7	**English Language Arts: Speaking and Listening Standards**	
	SL.11-12.1	Initiate and participate effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grades 11–12 topics, texts, and issues, building on others' ideas and expressing their own clearly and persuasively.
	SL.11-12.1a	Come to discussions prepared, having read and researched material under study; explicitly draw on that preparation by referring to evidence from texts and other research on the topic or issue to stimulate a thoughtful, well reasoned exchange of ideas.

ALIGNMENT OF FIRE SCIENCE STANDARDS AND THE COMMON CORE MATHEMATICAL PRACTICES

Common Core Mathematical Practices	Fire Science Performance Indicators
1. Make sense of problems and persevere in solving them.	1.2.4, 1.2.6; 1.3.1 6.3.1; 7.2.5; 8.3.3
2. Reason abstractly and quantitatively.	1.2.1, 1.2.4, 1.2.6; 1.3.2 6.3.3; 8.1.2
3. Construct viable arguments and critique the reasoning of others.	1.2.3; 1.3.1 6.3.3; 8.1.3
4. Model with mathematics.	1.2.2, 1.2.5 3.1.1; 3.1.2, 3.1.3 9.2.2
5. Use appropriate tools strategically.	1.2.2, 1.2.3, 1.2.5, 1.2.6; 1.3.2 4.1.2; 4.2.5; 4.2.6 6.1.12; 6.3.5 8.1.1, 8.1.2; 8.2.1 9.1.2, 9.1.3
6. Attend to precision.	1.2.2, 1.2.3, 1.2.4, 1.2.6; 1.3.2 4.1.2; 4.2.5, 4.2.6 6.1.12; 6.3.5 8.1.1, 8.1.2; 8.2.1 9.1.2, 9.1.3
7. Look for and make use of structure.	1.2.3,1.2.4 9.2.2
8. Look for and express regularity in repeated reasoning.	9.2.7

CROSSWALKS OF LAW ENFORCEMENT STANDARDS AND THE COMMON CAREER TECHNICAL CORE

Law, Public Safety, Corrections & Security Career Cluster™ (LW)	Performance Indicators
1. Analyze the nature and scope of the Law, Public Safety, Corrections & Security Career Cluster™ and the role law, public safety, corrections and security play in society and the economy.	5.1.2; 8.1.1; 9.2.8
2. Formulate ideas, proposals and solutions to ensure effective and efficient delivery of law, public safety, corrections and/or security services.	5.2.1; 7.1.1
3. Assess and implement measures to maintain safe and healthy working conditions in a law, public safety, corrections and/or security environment.	6.1.1; 8.3.1; 9.1.3
4. Conduct law, public safety, corrections and security work tasks in accordance with employee and employer rights, obligations and responsibilities, including occupational safety and health requirements.	3.3.1; 5.2.2; 7.2.5
5. Analyze the various laws, ordinances, regulations and organizational rules that apply to careers in law, public safety, corrections and security.	5.2.2; 6.2.1 7.1.1
6. Describe various career opportunities and means to those opportunities in each of the Law, Public Safety, Corrections & Security Career Pathways.	5.1.1, 5.1.5

Emergency & Fire Management Services Career Pathway (LW-COR)	Performance Indicators
1. Demonstrate effective communication skills (e.g., writing, speaking, listening and nonverbal communication) while utilizing communications equipment and platforms common to emergency and fire management services.	1.1.1, 1.1.2 2.1.5; 2.3.1, 2.3.2
2. Manage an incident scene as the first responder using emergency response skills.	6.3.1
3. Utilize up-to-date technology equipment and applications to facilitate the management of emergency and fire management situations.	2.2.2; 4.1.2; 8.3.5
4. Demonstrate an understanding of the objectives and a commitment to the mission of emergency and fire management services.	6.2.1, 6.2.2
5. Execute safety procedures and protocols associated with local, state and federal regulations.	3.3.1; 6.1.4; 7.2.5
6. Develop an organizational professional growth plan including the development of team building and leadership skills within the emergency and fire management environment.	5.1.2; 7.1.3
7. Describe the legal, regulatory and organizational guidelines governing emergency and fire management services.	5.2.2; 7.2.5
8. Compare and contrast the different career fields in fire and emergency management services.	5.1.1
9. Execute protocols for handling emergency situations that range from minor medical and fire emergencies to areawide incidents.	3.1.1; 6.1.5; 9.1.3
10. Demonstrate the use and various applications of the equipment commonly used in emergency and fire management services.	4.2.2; 6.1.7 8.2.1; 9.2.3
11. Implement an appropriate Incident Command System to effectively manage an incident scene.	5.1.6; 9.2.1

12. Use common codes and icons to properly handle and transport potentially hazardous substances in fire and medical emergency scenes.	6.3.8
13. Implement public relations plans to enhance public awareness and safety in fire and emergency situations.	2.3.4; 9.1.3
14. Describe the elements and issues involved in using the preparedness and response systems available to manage large-scale disasters.	6.3.4; 8.1.1
15. Analyze the key functions and techniques of critical infrastructure protection in cases of terrorism and/or natural disasters.	6.3.3; 8.1.1; 9.2.8