

Industrial Maintenance Standards



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Adopted by the Nevada State Board of Education on
November 3, 2022

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Vision

All Nevada students are equipped and feel empowered to attain their vision of success

Mission

To improve student achievement and educator effectiveness by ensuring opportunities, facilitating learning, and promoting excellence



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Acknowledgements

The development of Nevada career and technical education (CTE) standards and assessments is a collaborative effort sponsored by the Nevada Department of Education (NDE) Office of Career Readiness, Adult Learning, and Education Options. The Nevada Department of Education relies on educators and industry representatives who have the technical expertise and teaching experience to develop standards and performance indicators that truly measure student skill attainment. More importantly, the NDE would like to recognize the time and commitment by the writing team members in developing the career and technical standards for Industrial Maintenance.

Standards Development Members

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Myles Judd	Facility Management	Business and Industry Representative	Clark County School District

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 is coordinated with industry experts to ensure the standards include the proper content, or (3) nationally recognized standards currently endorsed by business and industry.

The Industrial Maintenance standards were validated through active participation of business and industry representatives on the development team.

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 Industrial Maintenance program. These standards are designed for a two-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 crosswalks and alignment sections of the document show where the performance indicators support the Nevada Academic Content Standards. Where correlation with an academic content standard exists, students in the Industrial Maintenance program perform learning activities that connect with and support the academic content standards that are listed. The crosswalks and alignments are not intended to teach academic standards.

All students are encouraged to participate in the career and technical student organization (CTSO) that relates to the Industrial Maintenance program. CTSOs are co-curricular national organizations that directly reinforce 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 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.

The **Standards Reference Code** is only used to identify or align performance indicators listed in the standards to daily lesson plans, curriculum documents, or national standards. The Standards Reference Code is an abbreviated name for the program, and the content standard, performance standard and performance indicator are referenced in the program standards. This abbreviated code for identifying standards uses each of these items. For example, INDUS is the Standards Reference Code for Industrial Maintenance. For Content Standard 2, Performance Standard 3 and Performance Indicator 4 the Standards Reference Code would be INDUS.2.3.4.

CONTENT STANDARD 1.0: INTEGRATE CAREER AND TECHNICAL STUDENT ORGANIZATIONS (CTSOs)***Performance Standard 1.1: Explore the History and Organization of CTSOs**

- 1.1.1 Discuss the requirements of CTSO participation/involvement as described in Carl D. Perkins Law
- 1.1.2 Research nationally recognized CTSOs
- 1.1.3 Investigate the impact of federal and state government regarding the progression and operation of CTSOs (e.g., Federal Statutes and Regulations, Nevada Administrative Code [NAC], Nevada Revised Statutes [NRS])

Performance Standard 1.2: Develop Leadership Skills

- 1.2.1 Discuss the purpose of parliamentary procedure
- 1.2.2 Demonstrate the proper use of parliamentary procedure
- 1.2.3 Differentiate between an office and a committee
- 1.2.4 Discuss the importance of participation in local, regional, state, and national conferences, events, and competitions
- 1.2.5 Participate in local, regional, state, or national conferences, events, or competitions
- 1.2.6 Describe the importance of a constitution and bylaws to the operation of a CTSO chapter

Performance Standard 1.3: Participate in Community Service

- 1.3.1 Explore opportunities in community service-related work-based learning (WBL)
- 1.3.2 Participate in a service learning (program related) and/or community service project or activity
- 1.3.3 Engage with business and industry partners for community service

Performance Standard 1.4: Develop Professional and Career Skills

- 1.4.1 Demonstrate college and career readiness (e.g., applications, resumes, interview skills, presentation skills)
- 1.4.2 Describe the appropriate professional/workplace attire and its importance
- 1.4.3 Investigate industry-standard credentials/certifications available within this Career Cluster™
- 1.4.4 Participate in authentic contextualized instructional activities
- 1.4.5 Demonstrate technical skills in various student organization activities/events

Performance Standard 1.5: Understand the Relevance of Career and Technical Education (CTE)

- 1.5.1 Make a connection between program standards to career pathway(s)
- 1.5.2 Explain the importance of participation and completion of a program of study
- 1.5.3 Promote community awareness of local student organizations associated with CTE programs

*Refer to the program of study Curriculum Framework for appropriate CTSO(s).

CONTENT STANDARD 2.0: IDENTIFY LAB ORGANIZATION AND SAFETY PROCEDURES**Performance Standard 2.1: Demonstrate General Lab Safety Rules and Procedures**

- 2.1.1 Describe general shop safety rules and procedures
- 2.1.2 Demonstrate knowledge of Occupational Safety and Health Administration (OSHA) and its role in workplace safety
- 2.1.3 Comply with the required use of personal protective equipment (PPE) during lab/shop activities
- 2.1.4 Utilize safe procedures for handling of tools and equipment
- 2.1.5 Operate lab equipment according to safety guidelines
- 2.1.6 Identify and use proper lifting procedures and proper use of support equipment
- 2.1.7 Utilize proper ventilation procedures for working within the lab/shop area
- 2.1.8 Identify marked safety areas
- 2.1.9 Identify the location and the types of fire extinguishers and other fire safety equipment
- 2.1.10 Demonstrate knowledge of the procedures for using fire extinguishers and other fire safety equipment
- 2.1.11 Identify the location and use of eye wash stations
- 2.1.12 Identify the location of the posted evacuation routes
- 2.1.13 Identify and wear appropriate clothing for lab/shop activities
- 2.1.14 Secure hair and jewelry for lab/shop activities
- 2.1.15 Demonstrate knowledge of the safety aspects of high voltage circuits requiring lock-out/tag-out (industry standard 50 volts)
- 2.1.16 Locate and interpret safety data sheets (SDS)
- 2.1.17 Prepare time or job cards, reports, or records
- 2.1.18 Perform housekeeping duties
- 2.1.19 Follow verbal instructions to complete work assignments
- 2.1.20 Follow written instructions to complete work assignments

Performance Standard 2.2: Identify and Utilize Hand Tools

- 2.2.1 Identify hand tools and their appropriate usage
- 2.2.2 Identify standard and metric designation
- 2.2.3 Demonstrate the proper techniques when using hand tools
- 2.2.4 Demonstrate safe handling and use of appropriate tools
- 2.2.5 Demonstrate proper cleaning, storage, and maintenance of tools

Performance Standard 2.3: Identify and Utilize Power and Battery-Operated Tools and Equipment

- 2.3.1 Identify power tools and their appropriate usage
- 2.3.2 Identify data collection tools and their appropriate usage
- 2.3.3 Demonstrate the proper techniques when using power tools and equipment
- 2.3.4 Demonstrate safe handling and use of appropriate power tools and equipment
- 2.3.5 Demonstrate proper cleaning, storage, and maintenance of power tools and equipment (e.g., battery charging, interface downloading)

CONTENT STANDARD 3.0: APPLY FUNDAMENTAL PRINT READING, MEASURING, AND SKETCHING TECHNIQUES**Performance Standard 3.1: Demonstrate Print Reading Practices**

- 3.1.1 Examine the basic elements of a technical drawing (e.g., legend, title block information, dimensions, line types, versioning)
- 3.1.2 Identify American National Standards Institute (ANSI) and International Organization for Standardization (ISO) industry standard symbols (i.e., hydraulic, pneumatic, electrical, welding, mechanical)
- 3.1.3 Prepare a materials list from a technical drawing
- 3.1.4 Describe various types of drawings (e.g., part, assembly, pictorial, orthographic, isometric, schematic)
- 3.1.5 Understand dimensioning, sectional drawings, fasteners, tables, charts, and assembly drawings

Performance Standard 3.2: Demonstrate Measuring and Scaling Techniques

- 3.2.1 Identify industry standard units of measure
- 3.2.2 Convert between customary (i.e., Society of Automotive Engineers [SAE], Imperial or metric systems)
- 3.2.3 Determine appropriate engineering and metric scales
- 3.2.4 Measure and calculate speed, distance, object size, area, and volume
- 3.2.5 Demonstrate proper use of precision measuring tools (e.g., micrometer, dial-indicator, dial-caliper)

Performance Standard 3.3: Demonstrate Freehand Technical Sketching Techniques

- 3.3.1 Prepare freehand and field sketches
- 3.3.2 Identify appropriate proportions
- 3.3.3 Create schematic diagrams using proper symbols
- 3.3.4 Annotate sketches legibly

CONTENT STANDARD 4.0: APPLY FUNDAMENTAL ENERGY PRINCIPLES**Performance Standard 4.1: Identify Energy Forms**

- 4.1.1 Define energy and stored energy
- 4.1.2 Categorize types of energy into major forms: thermal, radiant, nuclear, chemical, electrical, mechanical, solar, wind, and fluid
- 4.1.3 Identify units used to measure energy
- 4.1.4 Apply data and measurements to solve problems and interpret documents (e.g., resistances, Ohm's Law, power)
- 4.1.5 Calculate unit conversions between common energy measurements

Performance Standard 4.2: Distinguish Potential and Kinetic Energy

- 4.2.1 Define potential and kinetic energy
- 4.2.2 Identify forms of potential and kinetic energy

Performance Standard 4.3: Identify Thermodynamics

- 4.3.1 Define thermodynamics
- 4.3.2 Utilize industry standard terminology
- 4.3.3 Demonstrate the concepts of heat transfer (i.e., conduction, convection, radiation)

CONTENT STANDARD 5.0: APPLY FUNDAMENTAL POWER SYSTEM PRINCIPLES**Performance Standard 5.1: Identify Power Systems**

- 5.1.1 Define terms used in power systems (e.g., power, work, horsepower, watts)
- 5.1.2 Identify the basic power systems
- 5.1.3 List the basic elements of power systems
- 5.1.4 Summarize the advantages and disadvantages of various forms of power

Performance Standard 5.2: Identify and Utilize Basic Mechanical Systems from Various Industries

- 5.2.1 Locate and explain examples of the six simple machines and their attributes and components
- 5.2.2 Measure forces and distances related to mechanisms
- 5.2.3 Determine efficiency in a mechanical system
- 5.2.4 Calculate mechanical advantage
- 5.2.5 Measure torque and use it to calculate power

Performance Standard 5.3: Identify and Utilize Basic Fluid Systems from Various Industries

- 5.3.1 Define fluid systems (i.e., hydraulic, pneumatic, vacuum)
- 5.3.2 Discuss the difference pressure and flow (resistance and movement)
- 5.3.3 Identify the components of fluid systems
- 5.3.4 Compare and contrast hydraulic and pneumatic systems
- 5.3.5 Identify the advantages and disadvantages of using fluid power systems
- 5.3.6 Explain the difference between gauge pressure and absolute pressure
- 5.3.7 Discuss the safety concerns of working with liquids and gases stored under pressure
- 5.3.8 Test various fluid systems

Performance Standard 5.4: Identify and Utilize Basic Electrical Systems from Various Industries

- 5.4.1 Define alternating current (AC) and direct current (DC) electrical systems and terminology
- 5.4.2 Discuss the safety concerns of working with electricity
- 5.4.3 Identify series, parallel and series-parallel (combination) circuits
- 5.4.4 Solve series and parallel circuits using basic laws of electricity including Kirchhoff's laws
- 5.4.5 Introduce single-phase and three-phase AC power
- 5.4.6 Construct simple electrical circuits from a schematic

Performance Standard 5.5: Identify and Utilize Advanced Mechanical Systems from Various Industries

- 5.5.1 Explain the differences between gasoline engines and diesel engines (e.g., torque ratios, fuel economy, compression ratios, fuel types)
- 5.5.2 Identify electrical motor systems and motor controls by application (e.g., stepper, DC drive, AC drive)
- 5.5.3 Use safety procedures for advanced mechanical systems
- 5.5.4 Examine the relationship between bearings, couplings, and gear drives
- 5.5.5 Identify the components of the engine assembly
- 5.5.6 Inspect engine assembly components for fuel, oil, coolant, and other leaks to establish a repair plan
- 5.5.7 Repair, according to repair plan, various leaks in advanced mechanical systems (e.g., engine assembly fuel, oil, coolant)
- 5.5.8 Identify the components of drivetrain assemblies
- 5.5.9 Inspect drivetrain assemblies for leakage at external seals, gaskets, and bushings and establish a repair plan
- 5.5.10 Repair, according to repair plan, drivetrain assemblies for leakage at external seals, gaskets, and bushings in advanced mechanical systems
- 5.5.11 Explain belt drive concepts, v-belt operation, belt tensioning, and belt tension measurement
- 5.5.12 Demonstrate belt tensioning procedures and pulley/sheave alignment

CONTENT STANDARD 6.0: IDENTIFY AND APPLY FASTENING AND JOINING PROCESSES**Performance Standard 6.1: Identify Fasteners**

- 6.1.1 Identify various fastening methods (e.g., rivets, welds, adhesive, screws, nuts and bolts, seams)
- 6.1.2 Categorize fastening methods by appropriate applications
- 6.1.3 Interpret information on size, grade, and design of fasteners (e.g., threading, metal type, head style)
- 6.1.4 Explore the requirements of torque specifications in various applications (e.g., engines, piping systems, power plants)
- 6.1.5 Demonstrate fastening methods on various materials

Performance Standard 6.2: Demonstrate Safe and Proper Techniques in Oxy-fuel Gas Cutting (OFC)

- 6.2.1 Perform safety inspections of OFC equipment and accessories
- 6.2.2 Make minor external repairs to OFC equipment and accessories
- 6.2.3 Sets up for OFC operations on carbon steel
- 6.2.4 Operate OFC equipment on carbon steel
- 6.2.5 Perform straight, square edge cutting operations in the flat position on carbon steel

CONTENT STANDARD 7.0: APPLY FUNDAMENTAL ELECTRONIC AND INSTRUMENTATION PRINCIPLES**Performance Standard 7.1: Demonstrate Control Technology and Automation Principles**

- 7.1.1 Research the history and fundamentals of automation and control systems
- 7.1.2 Identify applications of control logic

Performance Standard 7.2: Demonstrate Diagnostic and Troubleshooting Practices

- 7.2.1 Explain a diagnostic procedure
- 7.2.2 Identify the components of a safety procedure checklist
- 7.2.3 Utilize all safety procedures necessary before performing a repair (e.g., lock-out/tag-out, etc.)
- 7.2.4 Navigate through user software
- 7.2.5 Understand and use software instructions offered in user software
- 7.2.6 Develop a routine maintenance plan
- 7.2.7 Utilize various sources of repair, maintenance, and troubleshooting documentation (e.g., print media, electronic, tech support, local expert)
- 7.2.8 Use manufacturer's documentation for troubleshooting
- 7.2.9 Utilize diagnostic tools appropriately
- 7.2.10 Troubleshoot and repair common problems

Performance Standard 7.3: Demonstrate Analog and Digital Electronic Principles

- 7.3.1 Demonstrate safe use of electricity and lab equipment
- 7.3.2 Understand and demonstrate basic electronic theory
- 7.3.3 Identify electronic components and their applications (e.g., resistors, capacitors, inductors, transformers, etc.)
- 7.3.4 Utilize tools and test equipment appropriately
- 7.3.5 Measure electrical characteristics of voltage, current, and resistance in basic electronic circuits using multi-meters and oscilloscopes
- 7.3.6 Demonstrate appropriate solder and de-solder techniques for electronics and electrical circuits
- 7.3.7 Demonstrate appropriate use of various connectors (e.g., crimp connectors, wire nuts, RJ45, CAT5e)
- 7.3.8 Construct a simple AC circuit using passive components (i.e., resistors, inductors, capacitors)
- 7.3.9 Construct a simple AC circuit using active components (i.e., diodes, transistors, linear devices)
- 7.3.10 Demonstrate the appropriate use of relays and switches

Crosswalks and Alignments

Crosswalks and alignments are intended to assist the teacher make connections for students between the technical skills within the program and academic standards. The crosswalks and alignments are not intended to teach the academic standards but to assist students in making meaningful connections between their CTE program of study and academic courses.

Crosswalks (Academic Standards)

The crosswalks of the Industrial Maintenance Standards show connections with the Nevada Academic Content Standards. The crosswalk identifies the performance indicators in which the learning objectives in the Industrial Maintenance program connect with and support academic learning. The performance indicators are grouped according to their content standard and are crosswalked to the Nevada Academic Content Standards in English Language Arts, Mathematics, and Science.

Alignments (Mathematical Practices)

In addition to connections with the Nevada Academic Content Standards for Mathematics, many performance indicators support the Mathematical Practices. The following table illustrates the alignment of the Industrial Maintenance Standards Performance Indicators and the Mathematical Practices. This alignment identifies the performance indicators in which the learning objectives in the Industrial Maintenance program connect with and support academic learning.

Alignments (Science and Engineering Practices)

In addition to connections with the Nevada Academic Content Standards for Science, many performance indicators support the Science and Engineering Practices. The following table illustrates the alignment of the Industrial Maintenance Standards Performance Indicators and the Science and Engineering Practices. This alignment identifies the performance indicators in which the learning objectives in the Industrial Maintenance program connect with and support academic learning.

Crosswalks (Common Career Technical Core)

The crosswalks of the Industrial Maintenance Standards show connections with the Common Career Technical Core. The crosswalk identifies the performance indicators in which the learning objectives in the Industrial Maintenance program connect with and 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 Industrial Maintenance Standards are crosswalked to the Manufacturing Career Cluster Career Cluster™ and the Machine, Installation, and Repair Career Pathway Career Pathway.

**Crosswalk of Industrial Maintenance Standards
and the Nevada Academic Content Standards**

Content Standard 1.0: Integrate Career and Technical Student Organizations (CTSOs)

Performance Indicators	Nevada Academic Content Standards
1.1.1	<p>English Language Arts: Speaking and Listening Standards</p> <p>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.</p> <p>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.</p> <p>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.</p>
1.1.2	<p>English Language Arts: Speaking and Listening Standards</p> <p>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.</p> <p>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.</p> <p>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.</p> <p>English Language Arts: Writing Standards for Literacy in Science and Technical Subjects</p> <p>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.</p>
1.1.3	<p>English Language Arts: Writing Standards for Literacy in Science and Technical Subjects</p> <p>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.</p>

Performance Indicators	Nevada Academic Content Standards
1.2.1	<p>English Language Arts: Speaking and Listening Standards</p> <p>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.</p> <p>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.</p> <p>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.</p>
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1.2.5	<p>English Language Arts: Writing Standards for Literacy in Science and Technical Subjects</p> <p>WHST.11-12.4 Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.</p>
1.4.1	<p>English Language Arts: Writing Standards for Literacy in Science and Technical Subjects</p> <p>WHST.11-12.4 Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.</p>

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1.4.2	<p>English Language Arts: Speaking and Listening Standards</p> <p>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.</p> <p>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.</p> <p>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.</p> <p>English Language Arts: Writing Standards for Literacy in Science and Technical Subjects</p> <p>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.</p>
1.4.3	<p>English Language Arts: Writing Standards for Literacy in Science and Technical Subjects</p> <p>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.</p>
1.4.4	<p>English Language Arts: Writing Standards for Literacy in Science and Technical Subjects</p> <p>WHST.11-12.5 Develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach, focusing on addressing what is most significant for a specific purpose and audience.</p>
1.4.5	<p>English Language Arts: Writing Standards for Literacy in Science and Technical Subjects</p> <p>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.</p>

Performance Indicators	Nevada Academic Content Standards
1.5.2	<p>English Language Arts: Language Standards L.11-12.6 Acquire and use accurately general academic and domain-specific words and phrases, sufficient for reading, writing, speaking, and listening at the college and career readiness level; demonstrate independence in gathering vocabulary knowledge when considering a word or phrase important to comprehension or expression.</p> <p>English Language Arts: Speaking and Listening Standards 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.11-12.4 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.</p> <p>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.</p>

Content Standard 2.0: Identify Lab Organization and Safety Procedures

Performance Indicators	Nevada Academic Content Standards
2.1.1	<p>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.</p> <p>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.</p>
2.1.2	<p>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.</p> <p>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.</p>
2.1.9	<p>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.</p> <p>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.</p>
2.1.16	<p>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.</p> <p>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.</p> <p>RST.11-12.5 Analyze how the text structures information or ideas into categories or hierarchies, demonstrating understanding of the information or ideas.</p> <p>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.</p> <p>WHST.11-12.9 Draw evidence from informational texts to support analysis, reflection, and research.</p>
2.1.17	<p>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.</p>

Performance Indicators	Nevada Academic Content Standards
2.1.19	<p>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.</p> <p>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.</p>
2.1.20	<p>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.</p> <p>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.</p>

Content Standard 3.0: Apply Fundamental Print Reading, Measuring, and Sketching Techniques

Performance Indicators	Nevada Academic Content Standards
3.1.1	<p>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.</p>
3.1.2	<p>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.</p>
3.1.3	<p>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.</p> <p>English Language Arts: Writing Standards for Literacy in Science and Technical Subjects WHST.11-12.2a Introduce a topic and organize complex ideas, concepts, and information so that each new element builds on that which precedes it to create a unified whole; include formatting (e.g., headings), graphics (e.g., figures, tables), and multimedia when useful to aiding comprehension.</p> <p>WHST.11-12.4 Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.</p>
3.1.4	<p>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.</p> <p>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.</p> <p>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.</p> <p>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.</p>
3.1.5	<p>Math: Number & Quantity – Quantities NQ.A.1 Use units as a way to understand problems and to guide the solution of multi-step problems; choose and interpret units consistently in formulas; choose and interpret the scale and the origin in graphs and data displays.</p> <p>NQ.A.2 Define appropriate quantities for the purpose of descriptive modeling.</p>
3.2.2	<p>Math: Number & Quantity – Quantities NQ.A.2 Define appropriate quantities for the purpose of descriptive modeling.</p>

Performance Indicators	Nevada Academic Content Standards
3.2.3	Math: Number & Quantity – Quantities NQ.A.3 Choose a level of accuracy appropriate to limitations on measurement when reporting quantities.
3.2.4	Math: Algebra – Seeing Structure in Expressions ASSE.A.1 Interpret expressions that represent a quantity in terms of its context. Math: Number & Quantity – Quantities NQ.A.2 Define appropriate quantities for the purpose of descriptive modeling.
3.2.5	Math: Algebra – Seeing Structure in Expressions ASSE.A.1 Interpret expressions that represent a quantity in terms of its context. Math: Number & Quantity – Quantities NQ.A.2 Define appropriate quantities for the purpose of descriptive modeling.
3.2.6	Math: Number & Quantity – Quantities NQ.A.3 Choose a level of accuracy appropriate to limitations on measurement when reporting quantities.
3.3.3	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.

Content Standard 4.0: Apply Fundamental Energy Principles

Performance Indicators	Nevada Academic Content Standards
4.1.2	<p>English Language Arts: Reading Standards for Informational Text RI.11-12.3 Analyze a complex set of ideas or sequence of events and explain how specific individuals, ideas, or events interact and develop over the course of the text.</p> <p>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.</p>
4.1.4	<p>Math: Algebra – Seeing Structure in Expressions ASSE.A.1 Interpret expressions that represent a quantity in terms of its context.</p> <p>Math: Number & Quantity – Quantities NQ.A.2 Define appropriate quantities for the purpose of descriptive modeling. NQ.A.3 Choose a level of accuracy appropriate to limitations on measurement when reporting quantities.</p> <p>Science: HS. Physical Sciences-HS. Energy HS-PS3-1 Create a computational model to calculate the change in the energy of one component in a system when the change in energy of the other component(s) and energy flows in and out of the system are known.</p>
4.1.5	<p>Math: Algebra – Seeing Structure in Expressions ASSE.A.1 Interpret expressions that represent a quantity in terms of its context.</p> <p>Math: Number & Quantity – Quantities NQ.A.2 Define appropriate quantities for the purpose of descriptive modeling.</p> <p>Science: HS. Physical Sciences-HS. Energy HS-PS3-1 Create a computational model to calculate the change in the energy of one component in a system when the change in energy of the other component(s) and energy flows in and out of the system are known.</p>
4.3.3	<p>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.</p> <p>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.</p> <p>Science: HS. Physical Sciences-HS. Energy HS-PS3-3 Design, build, and refine a device that works within given constraints to convert one form of energy into another form of energy.</p>

Content Standard 5.0: Apply Fundamental Power System Principles

Performance Indicators	Nevada Academic Content Standards
5.1.4	<p>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.</p> <p>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.</p>
5.2.1	<p>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.</p> <p>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.</p>
5.2.2	<p>Math: Number & Quantity – Quantities NQ.A.3 Choose a level of accuracy appropriate to limitations on measurement when reporting quantities.</p> <p>Science: HS. Physical Sciences-HS. Forces and Interactions HS-PS2-1 Analyze data to support the claim that Newton’s second law of motion describes the mathematical relationship among the net force on a macroscopic object, its mass, and its acceleration.</p>
5.2.3	<p>Science: HS. Physical Sciences-HS. Forces and Interactions HS-PS2-2 Use mathematical representations to support the claim that the total momentum of a system of objects is conserved when there is no net force on the system.</p>
5.2.4	<p>Math: Algebra – Seeing Structure in Expressions ASSE.A.1 Interpret expressions that represent a quantity in terms of its context.</p> <p>Math: Number & Quantity – Quantities NQ.A.2 Define appropriate quantities for the purpose of descriptive modeling.</p> <p>Science: HS. Physical Sciences-HS. Forces and Interactions HS-PS2-2 Use mathematical representations to support the claim that the total momentum of a system of objects is conserved when there is no net force on the system.</p>
5.2.5	<p>Math: Number & Quantity – Quantities NQ.A.3 Choose a level of accuracy appropriate to limitations on measurement when reporting quantities.</p> <p>Science: HS. Physical Sciences-HS. Forces and Interactions HS-PS2-2 Use mathematical representations to support the claim that the total momentum of a system of objects is conserved when there is no net force on the system.</p>

Performance Indicators	Nevada Academic Content Standards
5.3.2	<p>English Language Arts: Speaking and Listening Standards</p> <p>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.</p> <p>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.</p> <p>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.</p>
5.3.4	<p>English Language Arts: Reading Standards for Literacy in Science and Technical Subjects</p> <p>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.</p> <p>English Language Arts: Speaking and Listening Standards</p> <p>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.</p> <p>English Language Arts: Writing Standards for Literacy in Science and Technical Subjects</p> <p>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.</p>
5.3.6	<p>English Language Arts: Reading Standards for Literacy in Science and Technical Subjects</p> <p>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.</p> <p>English Language Arts: Speaking and Listening Standards</p> <p>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.</p> <p>English Language Arts: Writing Standards for Literacy in Science and Technical Subjects</p> <p>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.</p>

Performance Indicators	Nevada Academic Content Standards
5.3.7	<p>English Language Arts: Speaking and Listening Standards</p> <p>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.</p> <p>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.</p> <p>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.</p>
5.3.8	<p>English Language Arts: Reading Standards for Literacy in Science and Technical Subjects</p> <p>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.</p>
5.4.2	<p>English Language Arts: Speaking and Listening Standards</p> <p>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.</p> <p>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.</p> <p>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.</p>
5.4.4	<p>Math: Algebra – Seeing Structure in Expressions</p> <p>ASSE.A.2 Use the structure of an expression to identify ways to rewrite it.</p>
5.4.6	<p>English Language Arts: Reading Standards for Literacy in Science and Technical Subjects</p> <p>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.</p>

Performance Indicators	Nevada Academic Content Standards
5.5.1	<p>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.</p> <p>English Language Arts: Speaking and Listening Standards 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.</p> <p>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.</p>
5.5.3	<p>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.</p>
5.5.4	<p>English Language Arts: Reading Standards for Literacy in Science and Technical Subjects RST.11-12.5 Analyze how the text structures information or ideas into categories or hierarchies, demonstrating understanding of the information or ideas.</p> <p>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.</p> <p>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.</p>
5.5.11	<p>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.</p> <p>English Language Arts: Speaking and Listening Standards 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.</p> <p>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.</p>

Content Standard 6.0: Identify and Apply Fastening and Joining Processes

Performance Indicators	Nevada Academic Content Standards
6.1.2	<p>English Language Arts: Reading Standards for Informational Text RI.11-12.3 Analyze a complex set of ideas or sequence of events and explain how specific individuals, ideas, or events interact and develop over the course of the text.</p> <p>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.</p>
6.1.3	<p>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.</p> <p>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.</p> <p>RST.11-12.5 Analyze how the text structures information or ideas into categories or hierarchies, demonstrating understanding of the information or ideas.</p> <p>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.</p>
6.2.1	<p>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.</p>
6.2.2	<p>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.</p>

Content Standard 7.0: Apply Fundamental Electronic and Instrumentation Principles

Performance Indicators	Nevada Academic Content Standards
7.1.1	<p>English Language Arts: Speaking and Listening Standards</p> <p>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.</p> <p>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.</p> <p>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.</p> <p>English Language Arts: Writing Standards for Literacy in Science and Technical Subjects</p> <p>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.</p>
7.2.1	<p>English Language Arts: Reading Standards for Literacy in Science and Technical Subjects</p> <p>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.</p> <p>English Language Arts: Speaking and Listening Standards</p> <p>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.</p> <p>English Language Arts: Writing Standards for Literacy in Science and Technical Subjects</p> <p>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.</p>
7.2.3	<p>English Language Arts: Reading Standards for Literacy in Science and Technical Subjects</p> <p>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.</p>
7.2.8	<p>English Language Arts: Reading Standards for Literacy in Science and Technical Subjects</p> <p>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.</p>
7.3.8	<p>English Language Arts: Reading Standards for Literacy in Science and Technical Subjects</p> <p>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.</p>

Performance Indicators	Nevada Academic Content Standards
7.3.9	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.

**Alignment of Industrial Maintenance Standards
and the Mathematical Practices**

Mathematical Practices	Industrial Maintenance Performance Indicators
1. Make sense of problems and persevere in solving them.	3.2.4, 4.1.4, 4.1.5; 5.2.3-5.2.5; 5.4.4
2. Reason abstractly and quantitatively.	3.1.3, 3.1.5; 3.2.4; 4.1.4, 4.1.5; 5.2.3- 5.2.5; 5.4.4
3. Construct viable arguments and critique the reasoning of others.	4.1.4; 5.3.6: 5.4.4, 5.4.6
4. Model with mathematics.	4.1.4; 5.4.4
5. Use appropriate tools strategically.	3.2.3, 3.2.4, 3.2.6; 4.1.4; 5.2.2, 5.2.5; 7.2.9; 7.3.5
6. Attend to precision.	3.2.2-3.2.6; 4.1.5; 5.2.2, 5.2.5; 7.3.5
7. Look for and make use of structure.	4.1.4
8. Look for and express regularity in repeated reasoning.	

**Alignment of Industrial Maintenance Standards
and the Science and Engineering Practices**

Science and Engineering Practices	Industrial Maintenance Performance Indicators
1. Asking questions (for science) and defining problems (for engineering).	4.1.4; 4.3.3; 5.3.8
2. Developing and using models.	4.3.3; 5.4.6
3. Planning and carrying out investigations.	5.3.8
4. Analyzing and interpreting data.	4.1.4; 6.1.3
5. Using mathematics and computational thinking.	3.1.3, 3.1.5; 3.2.4; 4.1.4, 4.1.5; 5.2.3-5.2.5; 5.4.4
6. Constructing explanations (for science) and designing solutions (for engineering).	
7. Engaging in argument from evidence.	4.1.4
8. Obtaining, evaluating, and communicating information.	4.3.3; 5.1.4; 5.3.2

**Crosswalks of Industrial Maintenance Standards
and the Common Career Technical Core**

Manufacturing Career Cluster	Performance Indicators
1. Evaluate the nature and scope of the Manufacturing Career Cluster and the role of manufacturing in society and in the economy.	
2. Analyze and summarize how manufacturing businesses improve performance.	
3. Comply with federal, state, and local regulations to ensure worker safety and health and environmental work practices.	2.1.2, 2.1.16
4. Describe career opportunities and means to achieve those opportunities in each of the Manufacturing Career Pathways.	1.4.3
5. Describe government policies and industry standards that apply to manufacturing.	2.1.2
6. Demonstrate workplace knowledge and skills common to manufacturing.	2.1.17

Maintenance, Installation, and Repair Career Pathway	Performance Indicators
1. Demonstrate maintenance skills and proficient operation of equipment to maximize manufacturing performance.	
2. Demonstrate the safe use of manufacturing equipment to ensure a safe and healthy environment.	
3. Diagnose equipment problems and effectively repair manufacturing equipment.	7.2.1-7.2.10
4. Investigate and employ techniques to maximize manufacturing equipment performance.	7.2.6
5. Implement a preventative maintenance schedule to maintain manufacturing equipment, tools, and workstations.	7.2.6
6. Implement an effective, predictive, and preventive manufacturing equipment maintenance program.	7.2.6