ELECTRONIC TECHNOLOGY STANDARDS

This document was prepared by:

Office of Career, Technical and Adult Education
Nevada Department of Education
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CTE MISSION STATEMENT:

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

NEVADA DEPARTMENT OF EDUCATION

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ACKNOWLEDGEMENTS

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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 Electronic Technology Standards were validated through a complete review by an industry panel.

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 Electronic Technology program. These standards are designed for a three-credit course sequence that prepares the student for a technical assessment directly aligned to the standards.

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

The standards are organized as follows:

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

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

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

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

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

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

CONTENT STANDARD 1.0 : IDENTIFY LAB ORGANIZATION AND SAFETY PROCEDURES	
PERFORMANCE STANDARD 1.1 : DEMONSTRATE GENERAL LAB SAFETY RULES AND PROCEDURES	
1.1.1	Describe general shop safety rules and procedures (i.e., safety test)
1.1.2	Describe the roles of OSHA and UL in the workplace
1.1.3	Comply with the required use of personal protective equipment (PPE) during lab/shop activities
1.1.4	Utilize safe procedures for handling of tools and equipment
1.1.5	Operate lab equipment according to safety guidelines
1.1.6	Identify and use proper lifting procedures and proper use of support equipment
1.1.7	Utilize proper ventilation procedures for working within the lab/shop area
1.1.8	Identify marked safety areas
1.1.9	Identify the location and the types of fire extinguishers and other fire safety equipment; demonstrate knowledge of the procedures for using fire extinguishers and other fire safety equipment
1.1.10	Identify the location of the posted evacuation routes
1.1.11	Identify appropriate clothing for lab/shop activities
1.1.12	Secure hair and jewelry for lab/shop activities
1.1.13	Discuss the safety aspects of working with circuits
1.1.14	Locate and interpret material safety data sheets (MSDS)
1.1.15	Prepare reports or records
1.1.16	Perform housekeeping duties
1.1.17	Follow verbal instructions to complete work assignments
1.1.18	Follow written instructions to complete work assignments
PERFORMANCE STANDARD 1.2 : IDENTIFY AND SAFELY UTILIZE TOOLS	
1.2.1	Identify tools and their appropriate usage
1.2.2	Demonstrate the proper techniques when using tools
1.2.3	Demonstrate safe handling and use of appropriate tools
1.2.4	Demonstrate proper cleaning, storage, and maintenance of tools
PERFORMANCE STANDARD 1.3 : IDENTIFY AND SAFELY UTILIZE INSTRUMENTATION	
1.3.1	Identify test equipment and their appropriate usage
1.3.2	Demonstrate the proper techniques when using test equipment
1.3.3	Demonstrate safe handling and use of appropriate test equipment
1.3.4	Demonstrate proper cleaning, storage, and maintenance of test equipment

CONTENT STANDARD 2.0 : IDENTIFY FUNDAMENTAL ELECTRONIC THEORY AND THE HISTORY/FUTURE OF ELECTRONICS	
PERFORMANCE STANDARD 2.1 : EXPLAIN THE PRINCIPLES OF ELECTRONIC THEORY	
2.1.1	Summarize electron theory (i.e., matter, parts of an atom, charges)
2.1.2	Explain the characteristics of voltage, current, and resistance (i.e., unit of measure, letter/symbol)
2.1.3	Discuss how to generate electricity with magnetism, heat, light, friction, and pressure
2.1.4	Define key terms associated with the fundamentals of the theory of electronics
PERFORMANCE STANDARD 2.2 : IDENTIFY THE HISTORY AND FUTURE TRENDS IN ELECTRONICS	
2.2.1	Research the history of electricity
2.2.2	Research the history of electronics (i.e., vacuum tubes, transistors, integrated circuits)
2.2.3	Describe the impact of the advancement of electronics on society and the economy
2.2.4	Hypothesize the future of electronics
2.2.5	Investigate the advanced educational opportunities in the field of electronics
2.2.6	Investigate career opportunities in the field of electronics

CONTENT STANDARD 3.0 :	IDENTIFY AND ANALYZE ELECTRICAL COMPONENTS AND QUANTITIES
PERFORMANCE STANDARD 3.1 : IDENTIFY ELECTRONIC COMPONENTS	
3.1.1	Identify and explain the main purposes of electronic components
3.1.2	Classify designation letters used to represent electronic components
3.1.3	Illustrate schematic symbols for various types of electrical and electronic components
3.1.4	Recognize the effects of environmental conditions on electronic components
3.1.5	Define key terms associated with electronic components
PERFORMANCE STANDARD 3.2 : ANALYZE QUANTITIES UTILIZED IN ELECTRONICS	
3.2.1	Identify and utilize the basic units of electronic measurements
3.2.2	Express numbers in scientific engineering notation (i.e., prefixes and symbols)
3.2.3	Convert from scientific notation to engineering notation
3.2.4	Identify and utilize the resistor color code
3.2.5	Utilize Ohm's law to determine current, voltage, resistance, and power
3.2.6	Define key terms associated with quantities used in electronics

CONTENT STANDARD 4.0 : CONSTRUCT AND ANALYZE FUNDAMENTAL CIRCUIT CONFIGURATIONS	
PERFORMANCE STANDARD 4.1 : ANALYZE SERIES CIRCUIT CONFIGURATION	
4.1.1	Identify series circuit configuration
4.1.2	Calculate voltage drops in a series circuit
4.1.3	Utilize Kirchhoff's Voltage Law
4.1.4	Recognize polarity in a series circuit
4.1.5	Calculate voltage, current, resistance, and power in a series circuit
4.1.6	Construct, measure, and analyze simple series circuit
4.1.7	Define key terms associated with series circuits
PERFORMANCE STANDARD 4.2 : ANALYZE PARALLEL CIRCUIT CONFIGURATION	
4.2.1	Identify parallel circuit configuration
4.2.2	Calculate voltage drops in a parallel circuit
4.2.3	Utilize Kirchhoff's Current Law
4.2.4	Recognize polarity in a parallel circuit
4.2.5	Calculate voltage, current, resistance, and power in a parallel circuit
4.2.6	Construct, measure, and analyze simple parallel circuit
4.2.7	Define key terms associated with parallel circuits
PERFORMANCE STANDARD 4.3 : ANALYZE SERIES-PARALLEL CIRCUIT CONFIGURATION	
4.3.1	Identify series-parallel circuit configuration
4.3.2	Calculate voltage drops in a series-parallel circuit
4.3.3	Utilize Kirchhoff's Voltage and Current Laws where appropriate
4.3.4	Recognize polarity in a series-parallel circuit
4.3.5	Calculate voltage, current, resistance, and power in a series-parallel circuit
4.3.6	Construct, measure, and analyze a simple series-parallel circuit
4.3.7	Demonstrate a series-parallel circuit used as a voltage divider
4.3.8	Define key terms associated with series-parallel circuits

CONTENT STANDARD 5.0 : APPLY FUNDAMENTAL ANALOG ELECTRONIC PRINCIPLES	
PERFORMANCE STANDARD 5.1 : ANALYZE DIRECT CURRENT (DC) CIRCUITS	
5.1.1	Interpret electronic schematic diagrams
5.1.2	Construct and test DC circuits
5.1.3	Discuss basic electrical and magnetic properties and their relation to various materials
5.1.4	Demonstrate the proper usage of analog and digital meters
5.1.5	Research DC applications (i.e., motors, steppers)
5.1.6	Define key terms associated with DC circuits
PERFORMANCE STANDARD 5.2 : ANALYZE ALTERNATING CURRENT (AC) CIRCUITS	
5.2.1	Interpret electronic schematic diagrams
5.2.2	Construct and test AC circuits
5.2.3	Practice the proper usage of test equipment (i.e., analog and digital meters, oscilloscopes, AC voltage sources)
5.2.4	Identify AC wave form characteristics: effective voltage (RMS), average voltage, negative alternation, positive alternation, wavelength, amplitude, and period
5.2.5	Calculate peak, peak-to-peak, RMS, and average voltage values for an AC wave form
5.2.6	Explain cycle, hertz, and phase
5.2.7	Describe the requirement for inductance in AC electrical circuits (i.e., self and mutual inductance)
5.2.8	Compare and contrast reactance, resistance, and impedance
5.2.9	Explain phase relationships for series and parallel RL, RC, and RCL circuits
5.2.10	Research high and low pass filter circuits and AC motors
5.2.11	Define key terms associated with AC circuits

CONTENT STANDARD 6.0 : APPLY FUNDAMENTAL DIGITAL ELECTRONIC PRINCIPLES	
PERFORMANCE STANDARD 6.1 : ANALYZE DIGITAL DESIGN AND CIRCUITRY	
6.1.1	Identify and convert numbers between numbering systems (i.e., decimal, binary, hexadecimal, BCD)
6.1.2	Compare and contrast between 1 (high) and 0 (low or ground)
6.1.3	Perform numerical calculations in numbering systems
6.1.4	Identify and describe basic logic operations (i.e., AND, OR, buffer, inverter, NAND)
6.1.5	Explain Boolean algebra and its use in digital circuitry
6.1.6	Research Karnaugh maps
6.1.7	Interpret data sheet information
6.1.8	Evaluate logic circuit truth tables
6.1.9	Analyze clock and timing circuit operations
6.1.10	Analyze combinational logic circuits for a given application (i.e., relay logic)
6.1.11	Assess the operation of analog-to-digital and digital-to-analog convertors
6.1.12	Define key terms associated with digital electronics

CONTENT STANDARD 7.0 : APPLY MICROPROCESSOR AND MICROCONTROLLER PRINCIPLES	
PERFORMANCE STANDARD 7.1 : ANALYZE CONTROL DEVICES	
7.1.1	Describe basic principles of microprocessors
7.1.2	Describe the process of executing instructions in a microprocessor
7.1.3	Draw a flowchart for a typical program or process
7.1.4	Describe the procedure for instruction coding and program debugging
7.1.5	Describe the fundamental principles for microprocessor interfacing
7.1.6	Demonstrate basic wiring procedures for microprocessors
7.1.7	Write, deploy and test an original microcontroller program
7.1.8	Research current industry standards for application of programming
7.1.9	Define key terms associated with electronic control devices

CONTENT STANDARD 8.0 : APPLY FUNDAMENTAL FABRICATION AND SOLDERING TECHNIQUES	
PERFORMANCE STANDARD 8.1 : APPLY FUNDAMENTAL FABRICATION TECHNIQUES	
8.1.1	Investigate current industry standards for fabrication techniques
8.1.2	Demonstrate proper setup of fabrication area, equipment, and materials
8.1.3	Construct circuits/projects in the proper sequence
8.1.4	Properly layout circuits/projects from schematic diagrams/prints
8.1.5	Check work for accuracy
8.1.6	Analyze and summarize how manufacturing businesses improve performance
PERFORMANCE STANDARD 8.2 : APPLY STANDARD SOLDERING TECHNIQUES	
8.2.1	Research current industry standards for soldering
8.2.2	Explain solder safety (i.e., burns, fires, lead poisoning, fumes, damages)
8.2.3	Identify types of solder and soldering irons
8.2.4	Demonstrate the proper and safe method for soldering, de-soldering, and cleaning
8.2.5	Demonstrate the ability to solder components to a printed circuit board
8.2.6	Demonstrate the ability to de-solder components from a printed circuit board
8.2.7	Classify flux types and usages
8.2.8	Demonstrate proper usage of heat sinks
8.2.9	Recognize cold solder joints and explain the causes
8.2.10	Produce soldered joints to specifications
8.2.11	Compare and contrast good and bad mechanical and electrical solder connections
8.2.12	Demonstrate proper care of solder and de-solder equipment and aids
8.2.13	Utilize various types of de-soldering equipment and their usages (i.e., de-soldering braid/wick, de-soldering pumps)
8.2.14	Define key terms associated with soldering

CONTENT STANDARD 9.0 : APPLY FUNDAMENTAL TROUBLESHOOTING AND MAINTENANCE TECHNIQUES	
PERFORMANCE STANDARD 9.1 : APPLY TROUBLESHOOTING TECHNIQUES	
9.1.1	Explain troubleshooting procedures
9.1.2	Create and utilize a safety checklist
9.1.3	Utilize all safety procedures necessary while troubleshooting (e.g., lock-out/tag-out, etc.)
9.1.4	Select and utilize appropriate tools for electronics troubleshooting
9.1.5	Research various sources of repair/maintenance/troubleshooting documentation (e.g., print media, electronic, tech support, local expert)
9.1.6	Utilize manufacturers' documentation for troubleshooting
9.1.7	Interpret electronic schematic diagrams
9.1.8	Measure electrical characteristics of voltage, current, and resistance in basic electronic circuits using multi-meters, oscilloscopes, logic probes, etc.
9.1.9	Troubleshoot and repair common problems (i.e., faulty components, open circuits, short circuits, environmental conditions)
9.1.10	Define key terms associated with troubleshooting techniques
PERFORMANCE STANDARD 9.2: DEMONSTRATE MAINTENANCE AND REPAIR TECHNIQUES	
9.2.1	Explain the difference between maintenance and repair
9.2.2	Identify the common causes of system and equipment failures
9.2.3	Use electrostatic discharge (ESD) control devices and techniques when handling ESD-sensitive equipment and components
9.2.4	Utilize manufacturers' documentation to identify system problem(s)
9.2.5	Isolate common faults in wiring and equipment
9.2.6	Identify common preventive maintenance measures
9.2.7	Interpret preventive maintenance and inspection schedules
9.2.8	Develop a routine maintenance plan
9.2.9	Define key terms associated with maintenance and repair techniques

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CROSSWALKS AND ALIGNMENTS OF ELECTRONIC TECHNOLOGY 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 Electronic Technology Standards shows links to the Common Core State Standards for English Language Arts and Mathematics and the Nevada Science Standards. The crosswalk identifies the performance indicators in which the learning objectives in the Electronic Technology program support academic learning. The performance indicators are grouped according to their content standard and are crosswalked to the English Language Arts and Mathematics Common Core State Standards and the Nevada Science Standards.

ALIGNMENTS (MATHEMATICAL PRACTICES)

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

CROSSWALK (COMMON CAREER TECHNICAL CORE)

The crosswalk of the Electronic Technology Standards shows links to the Common Career Technical Core. The crosswalk identifies the performance indicators in which the learning objectives in the Electronic Technology 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 Electronic Technology Standards are crosswalked to the Manufacturing Career Cluster™ and the Maintenance, Installation & Repair Career Pathway.

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CROSSWALK OF ELECTRONIC TECHNOLOGY STANDARDS AND THE COMMON CORE STATE STANDARDS

CONTENT STANDARD 1.0: IDENTIFY LAB ORGANIZATION AND SAFETY PROCEDURES

Performance Indicators	Common Core State Standards and Nevada Science Standards
1.1.1	**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. 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.11-12.4 Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.
1.1.2	**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. **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.11-12.1a 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.
1.1.9	**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. **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.
1.1.13	**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.

1.1.14	**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. RST.11-12.4 Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to grades 11–12 texts and topics. RST.11-12.5 Analyze how the text structures information or ideas into categories or hierarchies, demonstrating understanding of the information or ideas. **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.11-12.9 Draw evidence from informational texts to support analysis, reflection, and research.
1.1.15	**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.
1.1.17	**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. **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.
1.1.18	**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. 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.

CONTENT STANDARD 2.0: IDENTIFY FUNDAMENTAL ELECTRONIC THEORY AND THE HISTORY/FUTURE OF ELECTRONICS

Performance Indicators	Common Core State Standards and Nevada Science Standards
2.1.1	**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. **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.
2.1.2	**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. **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.
2.1.3	**English Language Arts: Speaking and Listening Standards** SL.11-12.2 Integrate multiple sources of information presented in diverse formats and media (e.g., visually, quantitatively, orally) in order to make informed decisions and solve problems, evaluating the credibility and accuracy of each source and noting any discrepancies among the data. 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.
2.2.1	**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. **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.
2.2.2	**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. **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.

2.2.3	**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. **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.
2.2.4	**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. **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.

CONTENT STANDARD 3.0: IDENTIFY AND ANALYZE ELECTRICAL COMPONENTS AND QUANTITIES

Performance Indicators	Common Core State Standards and Nevada Science Standards
3.1.1	**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. **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.
3.1.2	**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.
3.1.3	**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.
3.1.4	**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. **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.
3.2.5	**Math: Algebra – Creating Equations** A-CED.4 Rearrange formulas to highlight a quantity of interest, using the same reasoning as in solving equations. **Math: Algebra – Reasoning with Equations and Inequalities** A-REI.3 Solve linear equations and inequalities in one variable, including equations with coefficients represented by letters. **Math: Functions – Linear, Quadratic, and Exponential Models** F-LE.5 Interpret the parameters in a linear or exponential function in terms of a context.

CONTENT STANDARD 4.0: CONSTRUCT AND ANALYZE FUNDAMENTAL CIRCUIT CONFIGURATIONS

Performance Indicators	Common Core State Standards and Nevada Science Standards
4.1.6	**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.
4.2.6	**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.
4.3.6	**English Language Arts: Reading Standards for Literacy in Science and Technical Subjects** RST.11-12.3 Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks; analyze the specific results based on explanations in the text.

CONTENT STANDARD 5.0: APPLY FUNDAMENTAL ANALOG ELECTRONIC PRINCIPLES

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.11-12.8 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.
5.1.2	**English Language Arts: Reading Standards for Literacy in Science and Technical Subjects** RST.11-12.3 Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks; analyze the specific results based on explanations in the text.
5.1.3	**English Language Arts: Speaking and Listening Standards** SL.11-12.2 Integrate multiple sources of information presented in diverse formats and media (e.g., visually, quantitatively, orally) in order to make informed decisions and solve problems, evaluating the credibility and accuracy of each source and noting any discrepancies among the data. 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.
5.1.5	**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. **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.
5.2.1	**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.
5.2.2	**English Language Arts: Reading Standards for Literacy in Science and Technical Subjects** RST.11-12.3 Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks; analyze the specific results based on explanations in the text.
5.2.4	**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.
5.2.5	**Math: Number & Quantity – Quantities** N-Q.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.

5.2.6	**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.
5.2.7	**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.
5.2.8	**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. **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.
5.2.9	**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. **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.
5.2.10	**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. **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.

CONTENT STANDARD 6.0: APPLY FUNDAMENTAL DIGITAL ELECTRONIC PRINCIPLES

Performance Indicators	Common Core State Standards and Nevada Science Standards
6.1.2	**English Language Arts: Reading Standards for Literacy in Science and Technical Subjects** RST.11-12.9 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.11-12.4 Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.
6.1.4	**English Language Arts: Reading Standards for Literacy in Science and Technical Subjects** RST.11-12.4 Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to grades 11–12 texts and topics. RST.11-12.9 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.11-12.8 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.
6.1.5	**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. **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. **Math: Algebra – Reasoning with Equations and Inequalities** A-REI.1 Explain each step in solving a simple equation as following from the equality of numbers asserted at the previous step, starting from the assumption that the original equation has a solution. Construct a viable argument to justify a solution method.
6.1.6	**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. **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.

6.1.7	**English Language Arts: Reading Standards for Literacy in Science and Technical Subjects** RST.11-12.7 Integrate and evaluate multiple sources of information presented in diverse formats and media (e.g., quantitative data, video, multimedia) in order to address a question or solve a problem. RST.11-12.9 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.11-12.8 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.
6.1.8	**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.
6.1.9	**English Language Arts: Reading Standards for Literacy in Science and Technical Subjects** RST.11-12.7 Integrate and evaluate multiple sources of information presented in diverse formats and media (e.g., quantitative data, video, multimedia) in order to address a question or solve a problem. RST.11-12.9 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.11-12.8 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.
6.1.10	**English Language Arts: Reading Standards for Literacy in Science and Technical Subjects** RST.11-12.7 Integrate and evaluate multiple sources of information presented in diverse formats and media (e.g., quantitative data, video, multimedia) in order to address a question or solve a problem. RST.11-12.9 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.11-12.8 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.

CONTENT STANDARD 7.0: APPLY MICROPROCESSOR AND MICROCONTROLLER PRINCIPLES

Performance Indicators	Common Core State Standards and Nevada Science Standards
7.1.1	**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.
7.1.2	**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. **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.
7.1.3	**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. **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.
7.1.4	**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.
7.1.5	**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.
7.1.6	**English Language Arts: Reading Standards for Literacy in Science and Technical Subjects** RST.11-12.3 Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks; analyze the specific results based on explanations in the text.
7.1.7	**English Language Arts: Reading Standards for Literacy in Science and Technical Subjects** RST.11-12.3 Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks; analyze the specific results based on explanations in the text.

7.1.8	**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. **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.

CONTENT STANDARD 8.0: APPLY FUNDAMENTAL FABRICATION AND SOLDERING TECHNIQUES

Performance Indicators	Common Core State Standards and Nevada Science Standards
8.1.1	**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. **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.
8.1.2	**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.
8.1.3	**English Language Arts: Reading Standards for Literacy in Science and Technical Subjects** RST.11-12.3 Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks; analyze the specific results based on explanations in the text.
8.1.4	**English Language Arts: Reading Standards for Literacy in Science and Technical Subjects** RST.11-12.3 Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks; analyze the specific results based on explanations in the text.
8.1.6	**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. **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.
8.2.1	**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. **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.
8.2.2	**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.
8.2.4	**English Language Arts: Reading Standards for Literacy in Science and Technical Subjects** RST.11-12.3 Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks; analyze the specific results based on explanations in the text.
8.2.11	**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: APPLY FUNDAMENTAL TROUBLESHOOTING AND MAINTENANCE TECHNIQUES

Performance Indicators	Common Core State Standards and Nevada Science Standards
9.1.1	**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.
9.1.2	**English Language Arts: Reading Standards for Literacy in Science and Technical Subjects** RST.11-12.3 Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks; analyze the specific results based on explanations in the text.
9.1.3	**English Language Arts: Reading Standards for Literacy in Science and Technical Subjects** RST.11-12.3 Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks; analyze the specific results based on explanations in the text.
9.1.5	**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. **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.
9.1.6	**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. **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.
9.1.7	**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. **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.
9.2.1	**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.

9.2.4	**English Language Arts: Reading Standards for Literacy in Science and Technical Subjects** RST.11-12.3 Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks; analyze the specific results based on explanations in the text. **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.
9.2.7	**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. **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.
9.2.8	**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.

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ALIGNMENT OF ELECTRONIC TECHNOLOGY STANDARDS AND THE COMMON CORE MATHEMATICAL PRACTICES

Common Core Mathematical Practices	Electronic Technology Performance Indicators
1. Make sense of problems and persevere in solving them.	4.1.5; 4.2.5; 4.3.5
2. Reason abstractly and quantitatively.	3.2.3, 3.2.5; 4.1.6; 4.2.6; 4.3.6 6.1.5, 6.1.8
3. Construct viable arguments and critique the reasoning of others.	3.2.5; 4.1.3, 4.1.5; 5.2.8
4. Model with mathematics.	3.2.5 4.1.3, 4.1.5; 4.2.3; 4.3.3, 4.3.7
5. Use appropriate tools strategically.	1.2.2; 1.3.2; 3.2.3 4.1.2, 4.1.3, 4.1.5, 4.1.6; 4.2.2, 4.2.3, 4.2.5, 4.2.6; 4.3.2, 4.3.3, 4.3.5 4.3.6, 4.3.7 5.1.2, 5.1.4; 5.2.2, 5.2.3, 5.2.4, 5.2.5 6.1.1, 6.1.3 9.1.8
6. Attend to precision.	1.1.15; 3.2.1, 3.2.2, 3.2.3 4.1.2, 4.1.3, 4.1.5, 4.1.6; 4.2.2, 4.2.3, 4.2.5, 4.2.6; 4.3.2, 4.3.3, 4.3.5 4.3.6 5.2.5 6.1.1, 6.1.2, 6.1.3, 6.1.5 9.1.8
7. Look for and make use of structure.	4.1.2; 5.2.5
8. Look for and express regularity in repeated reasoning.	4.1.2

CROSSWALKS OF ELECTRONIC TECHNOLOGY STANDARDS AND THE COMMON CAREER TECHNICAL CORE

Manufacturing Career Cluster™ (MN)	Performance Indicators
1. Evaluate the nature and scope of the Manufacturing Career Cluster™ and the role of manufacturing in society and in the economy.	2.2.3, 2.2.4, 2.2.5, 2.2.6
2. Analyze and summarize how manufacturing businesses improve performance.	8.1.6
3. Comply with federal, state and local regulations to ensure worker safety and health and environmental work practices.	1.1.1, 1.1.2, 1.1.3, 1.1.14
4. Describe career opportunities and means to achieve those opportunities in each of the Manufacturing Career Pathways.	2.2.5, 2.2.6
5. Describe government policies and industry standards that apply to manufacturing.	1.1.2, 1.1.14
6 Demonstrate workplace knowledge and skills common to manufacturing.	5.1.1, 5.2.1; 8.1.3, 8.1.5 8.2.4, 8.2.5, 8.2.6

Maintenance, Installation, & Repair Career Pathway (MN-MIR)	Performance Indicators
1. Demonstrate maintenance skills and proficient operation of equipment to maximize manufacturing performance.	9.1.4, 9.1.6
2. Demonstrate the safe use of manufacturing equipment to ensure a safe and healthy environment.	1.1.4, 1.1.5; 1.2.2, 1.2.3 1.3.2, 1.3.3; 9.1.3
3. Diagnose equipment problems and effectively repair manufacturing equipment.	9.1.4, 9.1.5, 9.1.6, 9.1.9
4. Investigate and employ techniques to maximize manufacturing equipment performance.	9.1.4, 9.1.5, 9.1.6
5. Implement a preventative maintenance schedule to maintain manufacturing equipment, tools and workstations.	9.2.6, 9.2.7, 9.2.8
6. Implement an effective, predictive and preventive manufacturing equipment maintenance program.	9.2.6, 9.2.7, 9.2.8