FURNITURE AND CABINETMAKING STANDARDS

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NEVADA STATE BOARD FOR CAREER AND TECHNICAL EDUCATION

CTE MISSION STATEMENT:

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

NEVADA DEPARTMENT OF EDUCATION

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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 Furniture and Cabinetmaking 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 Furniture and Cabinetmaking 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 Furniture and Cabinetmaking 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.

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.

Program Name	Standards Reference Code
Furniture and Cabinetmaking	FURNC

Example: FURNC.2.3.4

Standards	Content Standard	Performance Standard	Performance Indicator
Furniture and Cabinetmaking	2	3	4

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
1.1.2	Demonstrate knowledge of OSHA/EPA and their role in workplace safety
1.1.3	Comply with the required use of safety glasses, ear protection, gloves, and shoes during lab/shop activities (i.e., personal protection equipment – PPE)
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 and use of eye wash stations
1.1.11	Identify the location of the posted evacuation routes
1.1.12	Identify and wear appropriate clothing for lab/shop activities
1.1.13	Secure hair and jewelry for lab/shop activities
1.1.14	Demonstrate knowledge of the safety aspects of low and high voltage circuits
1.1.15	Locate and interpret material safety data sheets (MSDS)
1.1.16	Prepare time or job cards, reports or records
1.1.17	Perform housekeeping duties
1.1.18	Follow verbal instructions to complete work assignments
1.1.19	Follow written instructions to complete work assignments
PERFORMANCE STANDARD 1.2 : IDENTIFY AND UTILIZE HAND TOOLS	
1.2.1	Identify hand tools and their appropriate usage
1.2.2	Identify standard and metric designation
1.2.3	Demonstrate the proper techniques when using hand tools
1.2.4	Demonstrate safe handling and use of appropriate tools
1.2.5	Demonstrate proper cleaning, storage, and maintenance of tools
PERFORMANCE STANDARD 1.3 : IDENTIFY AND UTILIZE POWER TOOLS AND EQUIPMENT	
1.3.1	Identify power tools and their appropriate usage
1.3.2	Identify equipment and their appropriate usage
1.3.3	Demonstrate the proper techniques when using power tools and equipment
1.3.4	Demonstrate safe handling and use of appropriate power tools and equipment
1.3.5	Demonstrate proper cleaning, storage, and maintenance of power tools and equipment

CONTENT STANDARD 2.0 : APPLY FUNDAMENTAL DESIGN TECHNIQUES

PERFORMANCE STANDARD 2.1 : IDENTIFY ELEMENTS OF DESIGN

2.1.1	Explain the history of cabinetry and furniture styles from the 17th century to today
2.1.2	List characteristics of the styles that belong to traditional, provincial, and contemporary designs
2.1.3	Identify needs and wants in cabinets and furniture in everyday living
2.1.4	Describe the relationship between the function and form of a cabinet or piece of furniture
2.1.5	Identify various cabinet styles and components
2.1.6	Identify common sizes in relation to furniture and cabinets
2.1.7	Discuss elements of design (e.g., shapes, textures, lines, colors, etc.)
2.1.8	Discuss principles of design (e.g., harmony, symmetry, repetitions, balance, proportion, etc.)
2.1.9	Identify and describe Americans with Disabilities Act (ADA) requirements when applicable
2.1.10	Utilize client requirements and specifications to create a finish product

PERFORMANCE STANDARD 2.2 : DEMONSTRATE PRINT READING TECHNIQUES

2.2.1	Interpret basic elements of a working drawing (e.g., annotation, dimensions, line types, etc.)
2.2.2	Identify and define industry standard terminology
2.2.3	Describe various types of drawings (e.g., working, assembly, pictorial, orthographic, isometric, schematic, etc.)
2.2.4	Understand dimensioning, sectional drawings, fasteners, tables, charts, and assembly drawings
2.2.5	Develop a materials list from a working drawing
2.2.6	Develop a construction plan of procedure
2.2.7	Develop a cut list from a working drawing

PERFORMANCE STANDARD 2.3 : DEMONSTRATE MEASURES AND SCALING TECHNIQUES

2.3.1	Identify industry standard units of measure (e.g., standard, decimal, metric, etc.)
2.3.2	Define industry standard measurement terms (e.g., linear, square ft., tolerance, squareness, concentricity, perpendicular, parallel, etc.)
2.3.3	Convert between customary and metric systems
2.3.4	Determine cut speeds and feed rates
2.3.5	Demonstrate proper use of precision measuring tools (e.g., micrometer, dial-indicator, caliper, etc.)
2.3.6	Measure to the nearest 1/16th inch with a tape measure
2.3.7	Demonstrate the use of geometric shapes (e.g., arcs, circles, angles, compound angles, tapers, etc.)

PERFORMANCE STANDARD 2.4 : DEMONSTRATE FREEHAND TECHNICAL SKETCHING TECHNIQUES

2.4.1	Prepare freehand and field sketches
2.4.2	Identify appropriate proportions
2.4.3	Create a cutting diagram to minimize material waste
2.4.4	Annotate sketches legibly

PERFORMANCE STANDARD 2.5 : DEMONSTRATE AND APPLY MATHEMATICAL CONCEPTS	
2.5.1	Add, subtract, multiply and divide fractions, decimals, and whole numbers
2.5.2	Convert fractions to decimals
2.5.3	Determine the cost of materials needed for a furniture/cabinetmaking project
2.5.4	Produce an estimate of material and labor costs for a project
2.5.5	Calculate board feet, square feet, linear feet, arcs, and angles
2.5.6	Compare and contrast the cost of a specific project using different materials

CONTENT STANDARD 3.0 : IDENTIFY MATERIAL PROPERTIES AND HARDWARE	
PERFORMANCE STANDARD 3.1 : IDENTIFY MATERIALS AND THEIR PROPERTIES	
3.1.1	Identify and describe the major materials and their characteristics used in Furniture and Cabinetmaking (e.g., hardwood, softwood, composites, laminates, veneers, edge treatment, etc.)
3.1.2	Define material terminology (e.g., air dry, kiln dry, defects, lumber grade, face grades, sanded, etc.)
3.1.3	Differentiate between the various types of material properties and their applications
3.1.4	Discuss the impact of material usage on the environment
3.1.5	Discuss the impact of the environment and climate on materials
3.1.6	Explain how production is affected by the availability, quality, and quantity of resources
3.1.7	Differentiate between raw materials, standard stock, and finished products
3.1.8	Discuss packing and transportation methods
PERFORMANCE STANDARD 3.2 : IDENTIFY FASTENERS AND METHODS	
3.2.1	Identify and discuss various fasteners (e.g., type, purpose, application, etc.)
3.2.2	Categorize fastening methods by appropriate applications
3.2.3	Discuss fastening methods for various materials (e.g., toenailing, countersinking, pocket screws, dowels, biscuits, dominos, etc.)
PERFORMANCE STANDARD 3.3 : IDENTIFY ADHESIVES AND METHODS	
3.3.1	Identify and discuss various adhesives (e.g., glues, contact adhesives, thermosetting, etc.)
3.3.2	List and define common terminology (e.g., open assembly time, closed assembly time, cure time, slip, and shelf life, etc.)
3.3.3	Discuss adhesive methods for various materials
3.3.4	Compare characteristics of adhesives that affect the assembly time, cure time and strength of the product
3.3.5	Demonstrate the proper cleanup procedures for specific adhesives
PERFORMANCE STANDARD 3.4 : IDENTIFY AND UTILIZE HARDWARE	
3.4.1	Identify and describe common types of hardware and their applications
3.4.2	Select the hardware for the appropriate application
3.4.3	Layout, install, and adjust hardware

CONTENT STANDARD 4.0 : IDENTIFY AND APPLY MANUFACTURING PROCESSES	
PERFORMANCE STANDARD 4.1 : IDENTIFY MANUFACTURING PROCESSES	
4.1.1	Identify and describe the manufacturing processes (e.g., layout, milling, joinery, sanding, assembly, finishing, installation, etc.)
4.1.2	Discuss the impact of manufacturing processes on the environment
4.1.3	Describe lean manufacturing and explain its importance
4.1.4	Discuss the use of mass production techniques (e.g., parts duplication, etc.)
4.1.5	Discuss cabinet layout and installation techniques
4.1.6	Discuss countertop layout, materials, and installation techniques
PERFORMANCE STANDARD 4.2 : UTILIZE LAYOUT PRINCIPLES AND PRACTICES	
4.2.1	Interpret drawing, sketch or specification information
4.2.2	Prepare work area for layout
4.2.3	Select appropriate materials to complete work assignment
4.2.4	Use layout and marking tools as required
4.2.5	Layout parts using measurement practices
PERFORMANCE STANDARD 4.3 : UTILIZE MILLING OPERATIONS	
4.3.1	Identify terms used with milling tools (e.g., kerf, set, grain, TPI, drilling, boring, counterboring, countersinking, etc.)
4.3.2	Select the proper milling tools for specific operations (e.g., table saw, drill press, joiner, lathe, band saw, scroll saw, routers, etc.)
4.3.3	Demonstrate the steps to square a board
4.3.4	Demonstrate cutting and handling techniques used for lumber and sheet goods
4.3.5	Demonstrate the use of a jig, template, and fixture
PERFORMANCE STANDARD 4.4 : DEMONSTRATE COMPUTER NUMERICAL CONTROL (CNC) PROCEDURES	
4.4.1	Explain the CNC processes and software requirements (e.g., Cartesian coordinates, numeric code, machine code, import/export programs, etc.)
4.4.2	Determine the appropriate CNC settings for the various types of materials
4.4.3	Perform safety inspections of CNC equipment and accessories
4.4.4	Set up for CNC operations
4.4.5	Operate CNC equipment
4.4.6	Perform a straight cut
4.4.7	Perform a contoured cut

PERFORMANCE STANDARD 4.5 : UTILIZE JOINERY TECHNIQUES	
4.5.1	Identify terms used with joinery techniques (e.g., doweling, biscuits, dominos, tongue & groove, dados, miter, dovetail, etc.)
4.5.2	Determine the appropriate joinery applications
4.5.3	Discuss the advantages and disadvantages of joinery types
4.5.4	Select the proper joinery tools and machinery for specific operations
4.5.5	Construct various joints (i.e., dado, miter, rabbet, butt)
PERFORMANCE STANDARD 4.6 : UTILIZE SANDING PROCESSES AND TECHNIQUES	
4.6.1	Identify terms used with sanding processes and techniques (e.g., grit, belt, disc, hand, etc.)
4.6.2	Properly prepare a surface for a treatment or finish
4.6.3	Demonstrate proper application methods for different types of filler materials
4.6.4	Select the proper tool and abrasive for shaping and smoothing materials
4.6.5	Select the proper grit sizes and sequences for shaping and smoothing operations
4.6.6	Utilize the proper health and safety procedures when working with abrasives and fillers
PERFORMANCE STANDARD 4.7 : DEMONSTRATE ASSEMBLY PROCEDURES	
4.7.1	Identify terms used with assembly procedures (e.g., dry fitting, clamping, gluing, etc.)
4.7.2	Select the proper assembly tools for specific operations (e.g., c-clamps, bar clamps, pipe clamps, etc.)
4.7.3	Demonstrate assembly and clamping procedures
4.7.4	Demonstrate common case construction techniques (e.g., face frame, frameless, etc.)
4.7.5	Demonstrate common frame and panel construction techniques (e.g., stile, rail, panel, etc.)
4.7.6	Demonstrate common leg and rail construction techniques
4.7.7	Construct a cabinet or furniture drawer
4.7.8	Construct a cabinet or furniture door
4.7.9	Check the squareness of a project (e.g., diagonal method, 3-4-5 method, etc.)
4.7.10	Use specific quality control criteria to check the accuracy of a project
4.7.11	Demonstrate laminating techniques (e.g., plastic, veneers, edge treatment, etc.)
4.7.12	Demonstrate molding and trim usage and installation
PERFORMANCE STANDARD 4.8 : DEMONSTRATE FINISHING PROCEDURES	
4.8.1	Identify terms and products used in finishing procedures (e.g., staining, clear coating, penetrating oils, gloss, sheen, sealer, etc.)
4.8.2	Select the proper finishing tools and materials for specific operations
4.8.3	Demonstrate proper application methods for different types of finishes
4.8.4	Demonstrate clean up procedures for various types of finishing products and equipment
4.8.5	Utilize the proper health and safety procedures when working with finishes

CROSSWALKS AND ALIGNMENTS OF FURNITURE AND CABINETMAKING STANDARDS AND THE COMMON CORE STATE STANDARDS, THE NEVADA SCIENCE STANDARDS, AND THE COMMON CAREER TECHNICAL CORE STANDARDS

CROSSWALKS (ACADEMIC STANDARDS)

The crosswalk of the Furniture and Cabinetmaking 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 Furniture and Cabinetmaking 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 Furniture and Cabinetmaking Standards Performance Indicators and the Common Core Mathematical Practices. This alignment identifies the performance indicators in which the learning objectives in the Furniture and Cabinetmaking program support academic learning.

CROSSWALKS (COMMON CAREER TECHNICAL CORE)

The crosswalk of the Furniture and Cabinetmaking Standards shows links to the Common Career Technical Core. The crosswalk identifies the performance indicators in which the learning objectives in the Furniture and Cabinetmaking 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 Furniture and Cabinetmaking Standards are crosswalked to the Architecture & Construction Career Cluster™ and the Construction Career Pathway.

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CROSSWALK OF FURNITURE AND CABINETMAKING 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.
1.1.15	**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.
1.1.16	**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.

1.1.18	**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. **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.
1.1.19	**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: APPLY FUNDAMENTAL DESIGN TECHNIQUES

Performance Indicators	Common Core State Standards and Nevada Science Standards
2.1.1	**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.
2.1.4	**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. **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.
2.1.7	**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.
2.1.8	**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.

2.1.9	**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.11-12.8 Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the strengths and limitations of each source in terms of the specific task, purpose, and audience; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and overreliance on any one source and following a standard format for citation. **English Language Arts: 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.11-12.4 Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.
2.2.3	**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.
2.2.5	**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.
2.2.6	**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.
2.2.7	**English Language Arts: Reading Standards for Literacy** RST.11-12.3 Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks; analyze the specific results based on explanations in the text.
2.4.3	**English Language Arts: Reading Standards for Literacy** RST.11-12.3 Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks; analyze the specific results based on explanations in the text.
2.5.3	**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.

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CONTENT STANDARD 3.0: IDENTIFY MATERIAL PROPERTIES AND HARDWARE

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.11-12.4 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: 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. **Science: Nature of Science** N.12.B.2 Students know consumption patterns, conservation efforts, and cultural or social practices in countries have varying environmental impacts. **Science: Life Science** L.12.C.2 Students know how changes in an ecosystem can affect biodiversity and biodiversity's contribution to an ecosystem's stability. L.12.C.3 Students know the amount of living matter an environment can support is limited by the availability of matter, energy, and the ability of the ecosystem to recycle materials.
3.1.5	**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. **Science: Life Science** L.12.C.3 Students know the amount of living matter an environment can support is limited by the availability of matter, energy, and the ability of the ecosystem to recycle materials.
3.1.6	**English Language Arts: Reading Standards for Literacy** 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. **Science: Life Science** L.12.C.3 Students know the amount of living matter an environment can support is limited by the availability of matter, energy, and the ability of the ecosystem to recycle materials. **Science: Earth and Space** E.12.C.4 Students know processes of obtaining, using, and recycling of renewable and non-renewable resources.

3.1.8	**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.
3.2.1	**English Language Arts: Speaking and Listening Standards** SL.11-12.2 Integrate multiple sources of information presented in diverse formats and media (e.g., visually, quantitatively, orally) in order to make informed decisions and solve problems, evaluating the credibility and accuracy of each source and noting any discrepancies among the data. 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.
3.2.3	**English Language Arts: Speaking and Listening Standards** SL.11-12.2 Integrate multiple sources of information presented in diverse formats and media (e.g., visually, quantitatively, orally) in order to make informed decisions and solve problems, evaluating the credibility and accuracy of each source and noting any discrepancies among the data. SL.11-12.4 Present information, findings, and supporting evidence, conveying a clear and distinct perspective, such that listeners can follow the line of reasoning, alternative or opposing perspectives are addressed, and the organization, development, substance, and style are appropriate to purpose, audience, and a range of formal and informal tasks.
3.3.1	**English Language Arts: Speaking and Listening Standards** SL.11-12.2 Integrate multiple sources of information presented in diverse formats and media (e.g., visually, quantitatively, orally) in order to make informed decisions and solve problems, evaluating the credibility and accuracy of each source and noting any discrepancies among the data. 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.
3.3.3	**English Language Arts: Speaking and Listening Standards** SL.11-12.2 Integrate multiple sources of information presented in diverse formats and media (e.g., visually, quantitatively, orally) in order to make informed decisions and solve problems, evaluating the credibility and accuracy of each source and noting any discrepancies among the data. SL.11-12.4 Present information, findings, and supporting evidence, conveying a clear and distinct perspective, such that listeners can follow the line of reasoning, alternative or opposing perspectives are addressed, and the organization, development, substance, and style are appropriate to purpose, audience, and a range of formal and informal tasks.
3.3.4	**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.

3.3.5	**English Language Arts: Reading Standards for Literacy** 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. **Science: Nature of Science** N.12.A.4 Students know how to safely conduct an original scientific investigation using the appropriate tools and technology.
3.4.1	**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.

CONTENT STANDARD 4.0: IDENTIFY AND APPLY MANUFACTURING PROCESSES

Performance Indicators	Common Core State Standards and Nevada Science Standards
4.1.1	**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.
4.1.2	**English Language Arts: Speaking and Listening Standards** SL.11-12.2 Integrate multiple sources of information presented in diverse formats and media (e.g., visually, quantitatively, orally) in order to make informed decisions and solve problems, evaluating the credibility and accuracy of each source and noting any discrepancies among the data. SL.11-12.4 Present information, findings, and supporting evidence, conveying a clear and distinct perspective, such that listeners can follow the line of reasoning, alternative or opposing perspectives are addressed, and the organization, development, substance, and style are appropriate to purpose, audience, and a range of formal and informal tasks. **Science: Nature of Science** N.12.B.2 Students know consumption patterns, conservation efforts, and cultural or social practices in countries have varying environmental impacts. **Science: Life Science** L.12.C.3 Students know the amount of living matter an environment can support is limited by the availability of matter, energy, and the ability of the ecosystem to recycle materials.
4.1.3	**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.
4.1.4	**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.
4.1.5	**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.

4.1.6	**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.
4.2.1	**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.
4.4.1	**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.
4.4.3	**English Language Arts: Reading Standards for Literacy** 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.
4.5.2	**English Language Arts: Reading Standards for Literacy** 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.
4.5.3	**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.
4.6.3	**English Language Arts: Reading Standards for Literacy** 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.
4.6.6	**English Language Arts: Reading Standards for Literacy** 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. **Science: Nature of Science** N.12.A.4 Students know how to safely conduct an original scientific investigation using the appropriate tools and technology.
4.7.3	**English Language Arts: Reading Standards for Literacy** 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.

4.7.10	**English Language Arts: Reading Standards for Literacy** 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.
4.8.3	**English Language Arts: Reading Standards for Literacy** 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.
4.8.4	**English Language Arts: Reading Standards for Literacy** 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. **Science: Nature of Science** N.12.A.4 Students know how to safely conduct an original scientific investigation using the appropriate tools and technology.
4.8.5	**English Language Arts: Reading Standards for Literacy** 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. **Science: Nature of Science** N.12.A.4 Students know how to safely conduct an original scientific investigation using the appropriate tools and technology.

ALIGNMENT OF FURNITURE AND CABINETMAKING STANDARDS AND THE COMMON CORE MATHEMATICAL PRACTICES

Common Core Mathematical Practices	Furniture and Cabinetmaking Performance Indicators
1. Make sense of problems and persevere in solving them.	
2. Reason abstractly and quantitatively.	
3. Construct viable arguments and critique the reasoning of others.	
4. Model with mathematics.	
5. Use appropriate tools strategically.	2.3.3, 2.3.4, 2.3.5, 2.3.6, 2.3.7; 2.4.3; 2.5.1, 2.5.2, 2.5.3, 2.5.4, 2.5.5, 2.5.6 3.4.3 4.2.4, 4.2.5; 4.4.4, 4.4.5, 4.4.6, 4.4.7; 4.5.5; 4.6.6; 4.7.3, 4.7.9, 4.7.10; 4.8.4, 4.8.5
6. Attend to precision.	2.3.3, 2.3.4, 2.3.5, 2.3.6, 2.3.7; 2.4.3; 2.5.1, 2.5.2, 2.5.3, 2.5.4, 2.5.5, 2.5.6 3.4.3 4.2.4, 4.2.5; 4.4.4, 4.4.5, 4.4.6, 4.4.7; 4.5.5; 4.6.6; 4.7.3, 4.7.9, 4.7.10; 4.8.4, 4.8.5
7. Look for and make use of structure.	
8. Look for and express regularity in repeated reasoning.	

CROSSWALKS OF FURNITURE AND CABINETMAKING STANDARDS AND THE COMMON CAREER TECHNICAL CORE

Architecture & Construction Career Cluster™ (AC)	Performance Indicators
1. Use vocabulary, symbols and formulas common to architecture and construction.	2.1.5-2.1.10; 2.2.2 2.3.1-2.3.7; 2.5.1-2.5.6 3.1.1, 3.1.2; 3.3.1, 3.3.2 3.4.1; 4.1.1; 4.3.1 4.5.1; 4.6.1; 4.7.1; 4.8.1
2. Use architecture and construction skills to create and manage a project.	4.7.4 - 4.7.8
3. Comply with regulations and applicable codes to establish and manage a legal and safe workplace.	1.1.1-1.1.19; 2.1.9
4. Evaluate the nature and scope of the Architecture & Construction Career ClusterTM and the role of architecture and construction in society and the economy.	2.1.1-2.1.10; 3.1.4, 3.1.5
5. Describe the roles, responsibilities and relationships found in the architecture and construction trades and professions, including labor/management relationships.	ESCR 1.2.5
6. Read, interpret and use technical drawings, documents and specifications to plan a project.	2.1.10, 2.2.1; 2.2.3, 2.2.4 4.2.1
7. Describe career opportunities and means to achieve those opportunities in each of the Architecture & Construction Career Pathways.	ESCR.1.2.7

Construction Career Pathway (AC-CST)	Performance Indicators
1. Describe contractual relationships between all parties involved in the building process.	ESCR 1.2.10
2. Describe the approval procedures required for successful completion of a construction project.	2.2.6
3. Implement testing and inspection procedures to ensure successful completion of a construction project.	4.7.10
4. Apply scheduling practices to ensure the successful completion of a construction project.	2.2.5-2.2.7
5. Apply practices and procedures required to maintain jobsite safety.	1.1.1-1.1.19 3.3.5; 4.6.6; 4.8.4, 4.8.5
6. Manage relationships with internal and external parties to successfully complete construction projects.	ESCR 1.1.2 – 1.1.7 2.1.10
7. Compare and contrast the building systems and components required for a construction project.	3.2.1; 3.4.1; 4.1.6; 4.5.2 4.7.3-4.7.8; 4.8.2
8. Demonstrate the construction crafts required for each phase of a construction project.	4.1.1
9. Safely use and maintain appropriate tools, machinery, equipment and resources to accomplish construction project goals.	1.2.1-1.2.5; 1.3.1-1.3.5