CareerClusters™ PATHWAYS TO COLLEGE & CAREER READINESS
Architecture & Construction

Learning that works for Colorado CTE®

Colorado CTE Course – Scope and Sequence

Course Name	Woodworking Technology II	Course Details Course = 0.50 Carnegie Unit Credit	Credit = 1.0 Prerequisite: Woodworking Technology
Course Description	Students will expand their knowledge of workshop and tool safety, joinery techniques, project design, shop maintenance, power tool and hand tool use and wood theory. There will be an emphasis on craftsmanship and on joinery skills, attention to detail and elements of design.		
Note:	This is a suggested scope and sequence for the course content. The content will work with any textbook or instructional resource. If locally adapted, make sure all essential knowledge and skills are covered.		
SCED Identification #	17006	Schedule calculation based on 60 calendar days of a 90-day semester. Scope and sequence allows for additional time for guest speakers, student presentations, field trips, remediation, or other content topics.	

All courses taught in an approved CTE program must include Essential Skills embedded into the course content. The Essential Skills Framework for this course can be found at https://www.cde.state.co.us/standardsandinstruction/essentialskills

Instructional Unit Topic	Suggested Length of Instruction	CTE or Academic Standard Alignment	Competency / Performance Indicator	Outcome / Measurement	CTSO Integration
Career Development		Evaluate a wide range of career pathway opportunities for success in woodworking careers. Acquire career information and demonstrate knowledge of the career-planning process. Enhance the development of employment readiness skills	The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to: (A) identify employment opportunities, including entrepreneurship and preparation requirements, for mill and cabinetmaking; (B) demonstrate an understanding of group participation and leadership related to citizenship and career preparation; (C) identify employers' expectations for appropriate work habits;	Demonstrate Employability Skills Readiness: • Attendance, punctuality • Dependability, integrity and effort in the workplace • Social skills, team work and problem-solving and organizational skills • Communication skills Identify individual career goals in the cabinetry industry: • Demonstrate awareness of the education and	SkillsUSA Cabinetmaking contest Updates to ICAP

			(D) apply the competencies related to resources, information, systems, and technology in appropriate settings and situations; and (E) demonstrate knowledge of the concepts and skills related to health and safety in the workplace, as specified by appropriate governmental regulations.	training needed to achieve career goals. • Research employment and internship opportunities. • Compare and contrast entry-level training and education requirements with the students ICAP. Identify a plan to align additional training or experiences required to mitigate any gaps. • Use employability and job readiness skills in internship, mentoring, shadowing and/or other work experience.	
Safety		Understand and be able to demonstrate safe work practices. Determine and wear appropriate personal protective equipment. Comply with government regulations regarding health and safety in the shop.	The student knows the function and application of the tools, equipment, technologies, and materials used in mill and cabinetmaking. The student is expected to: (A) use in a safe manner hand and power tools and equipment commonly employed in mill and cabinetmaking;	Demonstrate safe operation and appropriate personal protective equipment for a variety of woodworking tools and machines: • Determine cause and effect for common shop safety related situations • Recall basic hand and power tool safety	

			(B) handle and dispose of environmentally hazardous materials used in mill and cabinetmaking; (C) demonstrate the proper procedures to saw, plane, shape, turn, bore, mortise, and sand various types of woods; and (D) demonstrate knowledge of new and emerging technologies that may affect mill and cabinetmaking.	from previous courses • Use proper industrial tool safety e.g. computer numeric control (CNC) and other industrial shop tools • Demonstrate how to handle, use and store chemicals according to MSDS/SDS sheets Apply fire safety rules and procedures. Students complete a safety checklist for each machine and procedure.	
Design Process and Material Selection		Understanding of the nature and impact of technology, engineering, technological design, and the designed world, as they relate to the individual, global society, and the environment. Understand and apply the design process as appropriate to the woodworking and furniture design industry. Apply Advanced Design and Layout Procedures. Understand Materials and Characteristics.	Design and create a product that maximizes conservation and sustainability of a scarce resource, using the design process and entrepreneurial skills throughout the design process. Student is expected to: (A) identify various elements of design and style (Shaker, 17th Century, Modern, etc.) (B) discuss sustainability and how working with natural resources impacts wood-related industries; (C) evaluate and select material based on design and function (i.e. pine,	Distinguish between hardwoods, softwoods and engineered materials: • Identify different species of hardwoods and softwoods • Identify grain patterns and color compatibility • Change the grain and check for strength using the same design. Identify the common grades of lumber and sheet goods Examples: • Selects, #1, AC, etc. • FAS, rough cut lumber, S1S, S2S, etc	

			poplar, maple, plywood, masonite) (D) differentiate various cabinetry materials and their appropriate applications (E) identify the common grades of lumber and sheet goods; (F) describe and identify natural defects in woods; (G) utilize proper storage and handling techniques; and (H) apply advanced technical drawing and blueprint reading skills for furniture and cabinet construction.	Describe and identify natural defects in woods (Warp, twist, cup, bow, knots, cracks, and checks). Research and report on a prominent design style. Student should be able to: • State the main features of the design • Describe the styles' popularity (time period, region, persons associated, etc.) • Common woods used • Common machinery associated with the design Discuss sustainability and how working with natural resources impacts wood-related industries. Develop a model that shows the conceptual understanding of a three-dimensional form from a two-dimensional drawing Example: • Build or create three-dimensional form models	
Machinery		Apply Advanced use of Hand Tools.	Student is expected to: (A) demonstrate advancing skills with common hand	Demonstrate safe use of appropriate hand and power tools and machinery.	

		Apply Advanced use of Portable and Stationary Power Tools. Understand applications of CNC machinery in the woodworking industry.	tool and machinery found in woodworking professions, including: • Hand and sharpening tool • Sawing and surfacing power tools/machinery • Fastening and assembly tools/machinery • Jig and Fixture tools/machinery (B) understand applications of CNC machinery in woodworking professions including: • Utilize software relevant to the industry. • Critically evaluate CNC router uses. • Set up and operate the router. • Perform router maintenance. • Develop CNC router operation skills typically used in industry.	Define the X,Y,Z coordinates involved in common Computer numeric control (CNC) applications Examples: • Utilize G-code operations in CNC • Design and create models in three dimensions	
Cutting and Shaping		Apply advanced skills in cutting and shaping processes.	Understand and apply advanced skills in cutting and shaping wood products. Student is expected to: (A) determine plumb, level, and square;	Demonstrate proper techniques used in various sawing, shaping, carving, molding, and routing applications:	

			(B) demonstrate proper techniques used in various sawing, shaping, carving, molding, and routing applications; (C) apply fabricating techniques of various cabinet parts; and (D) apply knowledge and technical skills to create various cabinets, doors and drawers	• lay out geometric shapes for project design • cut irregular shapes using appropriate tool/machine • utilize patterns and templates within their projects • smooth curves and edges using appropriate tool/machine • carve and shape lumber using appropriate tool/machine • use chisels to create desired shapes and designs Differentiate between different styles in cabinets, doors, and drawers Examples: • Euro • Traditional • Raised panel • Mission stile • Flat panel Identify and create the basic wood and mechanical joints used in cabinetry. Examples: • Butt • Miter • Rabbet	

				• Dado • Spline • Mortise and tenon • Dovetail • Groove (plough) • Lap • Pocket • Blind dado	
Fastening Techniques		Apply knowledge of cabinet fasteners and hardware.	Demonstrate the use of cabinet fasteners and hardware. Student is expected to: (A) determine proper application and use of mechanical fasteners and adhesives; (B) analyze different hinge systems and their applications; and (C) Analyze various drawer glides and their appropriate applications.	Determine proper application and use of mechanical fasteners and adhesives Examples: • Screws, nails, plugs, RTA connectors, etc. • Glue types (yellow, polyurethane, epoxy, etc.) Analyze different hinge systems and their applications Examples: • European, piano, butt, etc. Compare and contrast common drawer glides and their appropriate applications. Discuss implications for their selection (cost, design, function, etc) and alternatives that may be used.	
Finishing Techniques		Understand the finishing process used in furniture manufacturing.	Understand and apply finishing techniques. Student is expected to:	Explain how laminates affect aesthetic and structural qualities of woodworking.	

			(A) understand common finishing techniques; and (B) apply finishing techniques, including: • Removing excessive adhesive • Sanding and filling techniques • Laminates and veneers • Stains, varnishes, pigments, and paints (C) utilize safe and approved methods for cleanup and disposal (OSHA, EPA, DENR)	Demonstrate various ways to remove excess adhesive Example: • Sanding, chiseling, taping, etc. Apply surface preparation skills before finishing Examples: • Select proper abrasives and sanding equipment • Fillers Demonstrate safe and approved methods for cleanup and disposal of finishing materials used in furniture making.	
Assembly		Understand the assembly planning process for furniture and cabinets.	Student understands and applies logical assembly process procedures. Student is expected to: (A) develop and apply logical assembly processes and procedures.	Develop logical assembly process/procedure Example: • Clamping • Squaring • Fastening	
Applied Mathematics		Utilize advanced math skills, formulas, and principles used in cabinetry.	Apply geometric formulas to determine areas of various structures Examples: • Calculate areas and volumes of structures • Estimate materials and supplies Apply appropriate formulas to determine percentages/decimals		

			Examples: • Calculate percentages and decimals • Use percentage/decimals to perform measurement tasks Apply appropriate formulas to determine ratios, fractions, and proportion measures Examples: • Calculate linear feet, square feet, and board feet • Calculate ratio, fraction, and proportion measures • Use ratios, fractions, and proportion measures to perform measure tasks. Apply appropriate formulas to determine measurement of dimensions, spaces, and structures Examples: • Measure dimensions, spaces, and materials using US Standard units • Measure dimensions, spaces,		

			• and materials using metric units • Use dimension and space calculations to estimate materials and supplies needed		

CO CTE Academic Standards Resources (Rubrics, integration strategies, etc) CDE Colorado Academic Standards Online (Online standards lookup tool)

Reading, Writing, & Communicating

Standard 1: Oral Expression and Listening

• **Prepared Graduate 1**: Collaborate effectively as group members or leaders who listen actively and respectfully; pose thoughtful questions, acknowledge the ideas of others; and contribute ideas to further the group's attainment of an objective.

• **Prepared Graduate 2**: Deliver effective oral presentations for varied audiences and varied purposes.

Standard 2: Reading for All Purposes

• **Prepared Graduate 4:** Read a wide range of informational texts to build knowledge and to better understand the human experience.

• **Prepared Graduate 5:** Understand how language functions in different contexts, command a variety of word-learning strategies to assist comprehension, and make effective choices for meaning or style when writing and speaking.

Standard 3: Writing and Composition .

• **Prepared Graduate 8**: Craft narratives using techniques specific to the genre.

• **Prepared Graduate 9:** Demonstrate mastery of their own writing process with clear, coherent, and error-free polished products.

Standard 4: Research Inquiry and Design

• **Prepared Graduate 10:** Gather information from a variety of sources; analyze and evaluate its quality and relevance; and use it ethically to answer complex questions.

Note: Mathematics and Science standards will be added in the future. Visit the Colorado Academic Standards page for the most current version