Escondido Union High School District

Advanced Wood

EUHSD Board Approval Date: 4/17/18
The EUHSD Advanced Wood curriculum document identifies what students should be able to know by grade level in a comprehensive standards-based course of study in the Engineering and Architecture Pathway. This curriculum document may be revised based on student academic achievement data, research and best practices, and input from stakeholders. The EUHSD curriculum document contains the following documents and/or information:

A. Course Description  
B. Course Guidelines/Requirements - graduation credit information, transcript information, adopted materials, adopted technology, assessment outline  
C. Instructional Materials References  
D. Scope and Sequence Map with Essential Standards outlined by Unit  
E. References to key essential design and implementation documents

A comprehensive course of study and/or program is designed so that all students have access to the rigorous curriculum necessary to graduate high school demonstrating college and career readiness skills. Student-centered learning provides opportunity for collaboration, communication, and a robust learning environment and provides opportunities for all students to meet the goals of the district’s Instructional Focus at the time of this writing: “All students communicate their thinking, ideas and understanding by effectively using oral, written and/or non-verbal expression.” A key design consideration in the transition to the updated California State Standards is a focus on changes to pedagogy with an emphasis on ensuring students are engaged via relevant learning experiences.

A key design consideration in the transition to the new California State Standards is a focus on changes to pedagogy. The CA Learning Standards describe key instructional shifts, which guide classroom teaching and learning and provide a foundation of curriculum and instructional design based on student inquiry and a focus on rigorous literacy tasks. These instructional shifts are described on the California Department of Education’s website at the following URL: [https://www.cde.ca.gov/Re/cc/](https://www.cde.ca.gov/Re/cc/)

The curriculum document is aligned to the California Learning Standards and—more specifically—the Model Career Technical Education Standards, the CTE Knowledge and Performance Anchor Standards, and the Pathway Standards specific to this course of study. All CTE standards are located here: [https://www.cde.ca.gov/ci/ct/sf/](https://www.cde.ca.gov/ci/ct/sf/)

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Dr. Courtney Goode, Assistant Superintendent of Human Resources, Equity and Title IX Compliance Officer  
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Advanced Wood Course Description

Advanced Wood is the advanced course in EUHSD’s woodworking pathway and falls under the Building and Construction Trades Pathway. This course is designed to further the student’s knowledge and skills of furniture design and construction in the field of woodworking. In addition to developing skills in design and advanced woodworking techniques, students select and construct a major/technically advanced piece and/or group of well-designed, functional furniture pieces. Projects range from chairs, tables, desks, dressers, cabinets, and buffets, to grandfather clocks and stringed instruments. The class focuses on an occupational information concept, providing students with not only skills and abilities to succeed at entry-level jobs, but the attitudes of safety and managerial habits necessary to be successful in both a classroom and working environment. The class is repeatable for fourth year students who may focus on special projects and advanced study. This course is open to students who have demonstrated the pre-requisite habits of mind and the critical thinking and woodworking skills necessary to successfully complete advanced woodworking projects.

Course Requirements

<table>
<thead>
<tr>
<th>Course Length: Year Long</th>
<th>Grade Level: 11-12</th>
</tr>
</thead>
<tbody>
<tr>
<td>UC/CSU Requirement:</td>
<td>Graduation Requirement: EUHSD Fine Arts or CTE Requirement or Elective Credit</td>
</tr>
<tr>
<td>Course Number (Semester A): 6453</td>
<td>Transcript Abbreviation (Semester A): ADV WOOD (P) A</td>
</tr>
<tr>
<td>Course Number (Semester B): 6454</td>
<td>Transcript Abbreviation (Semester B): ADV WOOD (P) B</td>
</tr>
<tr>
<td>Credits (Semester A): 5 EUHSD Fine Arts or CTE Requirement or Elective Credit</td>
<td>Credits (Semester B): 5 EUHSD Fine Arts or CTE Requirement or Elective Credit</td>
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<tr>
<td>Required Prerequisite/s: “C” or better in Wood 2</td>
<td>Recommended Prerequisite/s: None</td>
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<tr>
<td>Industry Sector: Building and Construction Trades</td>
<td>Career Pathway: Cabinetry, Millwork and Woodworking</td>
</tr>
<tr>
<td>Board Approval Date (Curriculum): 4/17/18</td>
<td>Board Approval Date (Materials): updated 4/1/22</td>
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</tbody>
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Core Instructional Material/s:

1. This course uses Open Educational Resources (OERs) in order to access current digital libraries that are pivoting rapidly to industry needs.

Supplemental Instructional Material/s:

  Each unit of study contains a variety of web-based resources that are designed to supplement the tasks outlined within the specific unit.

Technology Resource(s):

- Students utilize a variety of technical equipment in the work/lab space including computer workstations, wood working tools and equipment, industry-standard print and digital texts, and other equipment and tools related to advanced wood working.

Assessment:

- The course is designed as a project-based curriculum; students must complete a variety of hands-on projects both collaboratively and individually. Each unit outlines specific skills and/or long-term projects, which serve as unit and course assessments. Students are required to communicate acquired concepts and skills via completion of wood projects, writing, verbal communication, etc., according to the Career Technical Education anchor and pathway/industry specific standards.

Meeting the Needs of ELs:

- Our student information system is used by site leaders and instructors to acquire the language levels of EUHSD English Learners to ensure they are identified, and their specific needs are met.
- Our approach to supporting English learners in based on the CA Department of Education (CDE) adopted language level proficiency descriptors and updated ELD Learning Standards. Visit the following website to learn more about those new descriptors and corresponding standards: [http://www.cde.ca.gov/sp/el/er/documents/elstndspubli14.pdf](http://www.cde.ca.gov/sp/el/er/documents/elstndspubli14.pdf)
- EUHSD uses the ELA-ELD Framework to inform pedagogical practices related to supporting English Learners. Visit the following URL to learn more about the new frameworks which describe in detail specific best practices used to support English Learners: [http://www.cde.ca.gov/ci/rl/cf/documents/elaelfwchapter11.pdf](http://www.cde.ca.gov/ci/rl/cf/documents/elaelfwchapter11.pdf)
Instructional Resources:
- Fully equipped woodworking shop, machinery, and tools
- Internet enabled computers
- Digital and print textbooks
- Performance Rubrics
- CA Colleges Website

Sample Instructional Routines:
- Teacher-led modeling
- Small and large group collaborative groups
- Ongoing Project-based Learning (PBL) routines and tasks

Scope and Sequence Guide

The Scope and Sequence Guide for this course is informed by the California Learning Standards and delineates the concepts and skills students are expected to acquire in order to meet College and Career Readiness expectations set forth by the state and local board approved guidelines. Each unit of study is designed to build upon the previous unit and/or prerequisite coursework in support of student mastery of specific standards-based skills. This Scope and Sequence document provides guidelines for instructors to ensure they have the necessary information related to content and pedagogy to guarantee students can meet the learning objectives of the course. The document is updated as needed based on input from all stakeholders to ensure it meets the needs of students.

All Career Technical Education coursework in the EUHSD is based on a series of state-adopted CTE standards which include the CTE Knowledge and Performance Anchor Standards, the California Standards for Career Ready Practice, and the CTE Model Curriculum Pathway Specific Standards. Not every standard and its related learning objective is included in the Scope and Sequence Guide since this document provides the essential pathway focus standards and key learning objectives for each unit with the related assignments and assessments. However, all of the CTE model Curriculum Pathway Standards are imbued in the student tasks throughout the course with specific standards emphasized in particular units in order to ensure students build the skills to ensure their success.

The CTE Standards for Career Ready Practice and CTE Model Curriculum Pathway Specific Standards below are integrated throughout the units and describe the fundamental knowledge and skills that a career ready student needs in order to prepare for transition to postsecondary education, career training, or the workforce. These standards are not exclusive to a career pathway, a CTE program of study, a particular discipline, or level of education. Standards for Career Ready Practice are taught and reinforced in all career exploration and preparation programs with increasingly higher levels of complexity and expectation as a student advances through a given pathway/program of study.

### CTE Standards for Career Ready Practice

1. Apply appropriate technical skills and academic knowledge.
2. Communicate clearly, effectively, and with reason [both in writing and verbally]
3. Develop an education and career plan aligned with personal goals.
4. Apply technology to enhance productivity
5. Utilize critical thinking to make sense of problems and persevere in solving them.
6. Practice personal health and understand financial literacy.
7. Act as a responsible citizen in the workplace and the community
8. Model integrity, ethical leadership, and effective management.
9. Work productively in teams while integrating cultural and global competence.
10. Demonstrate creativity and innovation
11. Employ valid and reliable research strategies.
12. Understand the environmental, social, and economic impacts of decisions

### CTE Model Curriculum Pathway Specific Standards

1.0 Academics: Analyze and apply appropriate academic standards...
2.0 Communications: Acquire and accurately use general academic and domain specific words...
3.0 Career Planning and Management: Integrate multiple sources of information...
4.0 Technology: Use technology, including the Internet, to produce, publish, and update writing...
5.0 Problem Solving and Critical Thinking: Conduct short as well as more sustained research...
6.0 Health and Safety: Determine the meaning of symbols, key words [related to health and safety...]
7.0 Responsibility and Flexibility: Initiate and participate in a range of collaborative discussions...
8.0 Ethics and Legal Responsibilities: Respond thoughtfully to diverse perspectives...
9.0 Leadership and Teamwork: Work with peers...[to] set clear goals, establish individual roles...
10.0 Technical Knowledge and Skills: Use technology...to produce, publish, and update...products...
11.0 Demonstration and Application: Demonstrate and apply the knowledge and skills contained in the industry-sector anchor standards, pathway standards, and performance indicators...
## Advanced Wood Scope and Sequence
### Unit 1 – Shop/Lab Safety & Protocols

**Length:** 3 Week/Ongoing

**Unit Description:** Unit 1, students will participate in hands-on activities designed to build on their understanding of participation in a workshop classroom environment. Students will build upon the safety skills acquired in year 1 and 2. Students further explore specific safety and use policies, procedures, and practices. Students examine workspaces for safety and/or health concerns and set up workspace according to industry and safety specifications. The students are expected to demonstrate a variety of safety practices through various classroom assignments and activities and will demonstrate their understanding through completion of a required safety test. This will include a comprehensive understanding of the various tools and equipment utilized within the shop, the safety features of each item, location of emergency wash stations, procedures for emergency notification, and protocols for working individually and within teams when operating machinery or handling tools. The skills acquired in Unit 1 are built upon in subsequent units of study. When students encounter new tools and/or equipment, they will repeat safety demonstrations and take safety quizzes or tests prior to use.

### Focus Cabinetry, Millwork, and Woodworking Pathway Standards:
- **6.0 Health and Safety** Demonstrate health and safety procedures, regulations, and personal health practices and determine the meaning of symbols, key terms, and domain-specific words and phrases as related to the Engineering and Architecture sector workplace environment. (Direct alignment with RSTS 9-10, 11-12.4)
- **6.1 Interpret policies, procedures, and regulations for the workplace environment,** including employer and employee responsibilities.
- **6.2 Use health and safety practices for storing, cleaning, and maintaining tools, equipment, and supplies.**
- **6.3 Set up a work area, or shop, to avoid potential health concerns and safety hazards,** including but not limited to electrical (shock), wires (tripping), fumes (lung health), noise (hearing loss), fire (burns), and so forth, incorporating ergonomics.
- **6.4 Practice personal safety when lifting, bending, or moving equipment and supplies.**
- **6.5 Demonstrate how to prevent and respond to work-related accidents or injuries; this includes demonstrating an understanding of ergonomics.**
- **6.6 Maintain a safe and healthful working environment.**
- **6.7 Be informed of laws/acts pertaining to the Occupational Safety and Health Administration (OSHA).**
- **6.8 Report hazards found on the job site to supervisor/teacher.**
- **6.9 Locate, and adhere to, Material Safety Data Sheet (MSDS) instructions.**
- **6.10 Maintain proper use of safety apparel at all times, including but not limited to, eye protection, hearing protection, skin protection, head protection, footwear and protection from airborne particulate matter.**
- **6.11 Comply with the safe handling, storage and disposal of chemicals, materials and adhesives in accordance with local, state, and federal safety and environmental regulations (OSHA, Environmental Protection Agency [EPA], Hazard Communication [HazCom], Material Safety Data Sheets [MSDS], etc.).**

### Key Learning Objectives & Tasks:

**Students will:**
- Communicate both orally and in writing.
- Conduct research, both small and on a larger scale, on specific assigned topics such as safety and machine tool use.
- Ask and answer questions using industry terminology.
- Interpret information from a variety of documents.
- Follow specific policies and procedures for safety and equipment use.
- Demonstrate health and safety practices when working in the shop.
- Maintain tools and equipment according to industry specifications.
- Set up and maintain shop to avoid health concerns or safety hazards.
- Practice personal safety when handling materials or machinery.
- Report hazards in the shop.
- Locate and adhere to MSDS instructions.

### Key Unit Assignments & Assessments:

- **Students complete a variety of hands-on safety demonstration assessments for specific tools and equipment.**
- **Notebook/portfolio creation and checks to track student progress and work.**
- **Students demonstrate their understanding of specific safety protocols via both informal verbal assessments and a formal written safety test with 100% accuracy.**
- Throughout the course, students will be expected to properly identify, use, and maintain a variety of shop tools and equipment according to industry specifications. The teacher, along with students who completed year 1 and 2, will demonstrate each piece of equipment and its safety features for each specific unit of study. Regardless of years in program, all students will complete a series of unit quizzes and an overall safety test in order to demonstrate understanding of key rules and procedures. For all tasks involving specific equipment use, students will conduct demonstrations of the equipment, showcasing the safety features and maintenance features. This will be repeated in each unit of study or when a new piece of equipment and/or tool is introduced.
- **All students will be required to maintain and/or build a notebook that outlines key equipment/tools and their use, function, and maintenance requirements and any specific industry related vocabulary terminology. This includes the specific equipment term and its official definition according to industry standards. For specific equipment safety regulations; This includes identifying any safety features of the specific tool or piece of equipment. As a demonstration of safety procedures, students will conduct demonstrations and take safety quizzes or tests prior to use.**
A7.0 Demonstrate competence in various construction processes in the cabinetmaking, furniture making, and mill working industries.

7.2 Explain the importance of accountability and responsibility in fulfilling personal, community, and workplace roles.

7.3 Understand the need to adapt to changing and varied roles and responsibilities.

7.4 Practice time management and efficiency to fulfill responsibilities.

A9.0 Understand finishes and when to apply paint, stains, sealers, varnishes, and catalyzed finishes, including water- and oil-based finishes.

9.1 Define leadership and identify the responsibilities, competencies, and behaviors of successful leaders.

9.2 Identify the characteristics of successful teams, including leadership, cooperation, collaboration, and effective decision-making skills as applied in groups, teams, and career technical student organization activities.

A10.0 Demonstrate proper techniques for cabinet installation.

11.1 Utilize work-based/workplace learning experiences to demonstrate and expand upon knowledge and skills gained during classroom instruction and laboratory practices specific to the Building and Construction Trades sector program of study.

- Work well independently and/or with a small team, maintaining appropriate teamwork procedures.
- Use industry terminology correctly.
- Demonstrate effective time management skills.
- Utilize measurement skills acquired within class and within math classes.
- Select proper tools for specific jobs and/or plans.
- Identify basic shop machinery, use, safety features, and functions.

requirements for learning, students will complete the following activities:

- Students will work in groups of 2-3 to create a poster diagramming and outlining key components of workshop safety. Students will present their posters to two other groups and will evaluate their posters according to industry standards reviewed in class.
- Students will take a multiple-choice safety assessment and will pass with at least 90% accuracy prior to utilizing equipment and/or working in the shop area. Students who do not get 100% accuracy will write out the incorrect questions, research the correct answer, respond with the correct answer, and will note the specific rationale for why they may have selected the incorrect answer.
- Students develop/build on a housekeeping/clean-up plan for each shop based on photographs and videos of the workshops as they appear during actual work. The plan will be in a spreadsheet format, identifying potential hazards and ways to mitigate those hazards so they do not result in injuries.
- Students will present their research and products and organize them into their coursework portfolio.
Advanced Wood Scope and Sequence
Unit 2 – Advanced Tools & Techniques
Length: 3 Weeks

Unit Description: In Unit 2, students build on the basic knowledge of advanced machine tools and techniques common to the furniture construction industry. They research and explore the wide array of tools used in cabinetry, millwork, and woodworking with an emphasis on more sophisticated and complex woodworking applications. They describe the tools in the shop and answer questions related to design and production. Students apply their understanding by creating presentations and by using various tools for a variety of applications including the production of a lay-up sample.

Focus Cabinetry, Millwork, and Woodworking Pathway Standards:
A1.0 Demonstrate competence in planning, design, layout, and technical drawing interpretation for practical use in cabinetmaking and mill working.
A1.9 Use drafting tools to create a pictorial and working drawing for a basic cabinet.
A2.0 Differentiate between the various furniture and cabinet styles used in the cabinet and furniture industry.
A2.1 Identify various cabinet styles and list characteristics of traditional, provincial, and contemporary designs.
A2.2 Identify various kitchen, bath, and utility cabinet components.
A2.3 Explain the progress of cabinetry and furniture styles from the seventeenth century to today.
A3.0 Interpret and apply information to develop a bill of materials, estimate the cost of materials, and develop a plan of procedures to complete a project.
A4.0 Demonstrate proper selection and use of woodworking tools.
A4.1 Demonstrate the accurate use of common measuring and layout tools.
A4.2 Select the proper layout tools for specific tasks.
A4.3 Select the proper cutting tools for specific operations (e.g., straight cuts, curves, drilling holes).
A4.4 Select the most appropriate blade for a given operation.
A4.5 Select the proper boring tools for specific operations.
A4.6 Select the proper hand-shaping tools for specific operations.
A4.7 Select proper clamping tools for specific operations.
6.0 Compare and contrast the advantages and disadvantages of using laminates verses using veneers.
A7.0 Demonstrate competence in various construction processes in the cabinetmaking, furniture making, and mill working industries.
A8.0 Utilize appropriate abrasives to prepare a project for a specific finish.
A9.0 Understand finishes and when to apply paint, stains, sealers, varnishes, and catalyzed finishes, including water- and oil-based finishes.
A10.0 Demonstrate proper techniques for cabinet installation.
A11.0 Identify the advantages and disadvantages for various countertop materials.

Key Learning Objectives & Tasks:
Students will...
- Research and explore advanced various cabinetry, millwork, and woodworking tools and techniques through research, discussion, and project-based tasks.
- Tour the shop and answer a variety of questions requiring them to name and describe the various machines and tools and their primary functions/uses.
- Students demonstrate an understanding of the processes required to mill coves, tapers, cabriole legs, dovetail joints, compound angles, curved moldings, and tambour roll tops.
- Describe the procedures of bending wood by steam, dry and wet methods.
- Learn the current process of veneer and lay-work using several different types of materials.

Key Unit Assignments & Assessments:
- Students will demonstrate a more sophisticated understanding of the tools and techniques related to woodworking by conducting individual and collaborative research regarding a variety of industry applications.
- Students make presentation on the various primary tools demonstrating intermediate and advanced techniques for specific applications and product creation.
- Students will demonstrate the accurate use of common measuring and layout tools.
- Students will construct a lay-up sample that covers three edges and a top surface.
- Students will design and produce a lay-up sample utilizing an alternate self-edge style.
- Students will design and construct a functional project that integrates veneer or laminate with wood.
- Students will select plastic laminate, calculate needed size, rough-cut, laminate and perform appropriate trim and finish detail to required sample board.
- Students will present their products and organize them into their coursework portfolio.
Advanced Wood Scope and Sequence
Unit 3 – Furniture Design & Construction: Then and Now
Length: 3 Weeks

Unit Description: In Unit 3, students build on the foundational concepts and skills acquired in the first course, they delve more deeply into historical and contemporary furniture design and construction practices. They research, analyze, and apply design types and phases of various cabinetry, millwork, and woodworking applications. They also research and explore the history of woodworking and joinery and make cross-curricular connections, especially with history/social-science by exploring the way woodworking technology affected and continues to affect society including industrial progress, warfare, and the natural environment. Students research, analyze, and reflect on various furniture designs including table and chair styles. Students analyze design considerations, construction methods and related operations and processes and how they apply to larger projects.

Focus Cabinetry, Millwork, and Woodworking Pathway Standards:
A1.0 Demonstrate competence in planning, design, layout, and technical drawing interpretation for practical use in cabinetmaking and mill working.
A1.1 Identify common sizes in relation to furniture and cabinets.
A1.2 Describe the relationship between the function and form of a cabinet.
A1.3 Calculate board, square, and linear feet.
A1.4 Estimate material costs.
A1.5 Apply design elements: shapes, textures, lines, and colors to create functional and attractive cabinets, furniture, and millwork.
A1.6 Apply principles of design, harmony, repetitions, balance, and proportion to create functional and attractive cabinets, furniture, and millwork.
A1.7 Read and interpret technical drawings.
A1.8 Sketch a project using manual drawing techniques.
A1.9 Use drafting tools to create a pictorial and working drawing for a basic cabinet.
A2.0 Differentiate between the various furniture and cabinet styles used in the cabinet and furniture industry.
A2.1 Identify various cabinet styles and list characteristics of traditional, provincial, and contemporary designs.
A2.3 Explain the progress of cabinetry and furniture styles from the seventeenth century to today.
6.0 Compare and contrast the advantages and disadvantages of using laminates versus using veneers.
A6.5 Compare and contrast joints commonly used in the cabinetmaking and mill working industries (i.e., strength, appearance, and ease of construction).
A6.6 Determine the appropriate application of a variety of joinery techniques, including dowels, biscuits, pocket holes, and mortise and tenon.
A6.13 Demonstrate the ability to construct a variety of wood joints (i.e. butt, miter, compound miter, half lap, mortise and tenon).
A7.0 Demonstrate competence in various construction processes in the cabinetmaking, furniture making, and mill working industries.

Key Learning Objectives & Tasks:
Students will…
- Research, explore, and analyze key furniture design and construction principles, concepts, practices, and products.
- Explore functional and aesthetic elements of furniture design throughout history.
- Explore the various phases of woodworking design processes.
- Research, explore, and understand the history of the industry and make connections to contemporary industrial practices.
- Make connections between the industry and a variety of other content areas and issues (e.g. history, the environment, literacy, technology, etc.).
- Recognize the principle elements of furniture design while identifying appropriate construction and assembly methods.
- Differentiate between the various furniture and cabinet styles used in the cabinet and furniture industry.
- Identify various practical components of various furniture types.

Key Unit Assignments & Assessments:
- Students are provided questions and tasks requiring them to present key facts and major events regarding the history and design of the industry; they present their findings verbally and in writing.
- Students demonstrate knowledge of various leg and rail joints, processes and application to tables and chairs.
- Students will list correct sequence of steps in order to construct a leg and rail type project that utilizes sound assembly techniques.
- Students will construct a corner joint of either a dowel and brace on mortise tenon type that could be integrated into a chair or table.
- Students will be supplied blanks to layout and cut with stub mortise and tenon joint as a practice exercise.
- Students will present their research and products and organize them into their coursework portfolio.
### Advanced Wood Scope and Sequence

**Unit 4 – Shop Maintenance, Management & Improvement**

**Length: 3 Weeks/Throughout**

**Unit Description:** In Unit 4, students receive explicit instruction and project-based experience related to shop maintenance, management and improvement. Students review and further explore the knowledge of proper machine and tool care and routine and preventative maintenance. This unit concurrently focuses on defining leadership skills as well as identifying roles and responsibilities within a team. The activities and projects in this course facilitate interactions between peers that promote divergent and creative perspectives, effective leadership, group dynamics, team and individual decision making, benefits of workforce diversity, and conflict resolution as practiced in the SkillsUSA career technical student organization.

<table>
<thead>
<tr>
<th>Focus Cabinetry, Millwork, and Woodworking Pathway Standards:</th>
<th>Key Learning Objectives &amp; Tasks: Students will…</th>
<th>Key Unit Assignments &amp; Assessments:</th>
</tr>
</thead>
<tbody>
<tr>
<td>A3.0 Interpret and apply information to develop a bill of materials, estimate the cost of materials, and develop a plan of procedures to complete a project.</td>
<td>• Demonstrate understanding of maintenance requirements on five portable power tools and five stationary woodworking machines.</td>
<td>• Students will discuss and share their experiences and understandings related to workspace maintenance, management and improvement.</td>
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<tr>
<td>A3.1 List the sequence of cutting procedures, assembly, and finishing steps.</td>
<td>• Explore best practices around maintenance by identifying malfunctioning and misaligned tools, troubleshooting possible solutions, and implementing solutions.</td>
<td>• Students will be presented with a variety of situations and tasks and they will be asked to create products and demonstrate their understanding of shop maintenance and management in relation to those projects/tasks.</td>
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<td>A3.2 Evaluate an existing bill of materials for accuracy.</td>
<td>• Maintain machines by tuning them to optimize performance.</td>
<td>• Students will perform a routine check of a variety of tools including bearings, lead screws, gears, and movable parts on specific woodworking machines; they will be asked to explain both verbally and in writing the protocols and processes used to ensure proper maintenance and safety.</td>
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<tr>
<td>A3.3 Determine the cost of materials needed for a cabinet or furniture project.</td>
<td>• Manage projects by producing necessary documents, creating timelines, and implementing a work schedule.</td>
<td>• Students will recondition a machine surface and implement systems of management in relation to those projects/tasks.</td>
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<td>A3.4 Optimize available materials from a cutting diagram.</td>
<td>• Demonstrate their knowledge of workflow in the shop, by identifying obstacles to efficiency and addressing them.</td>
<td>• Students will design and construct a tool holder or attachment that will improve a piece of equipment and increase the effectiveness of the tool in a woodworking setting.</td>
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<td>A3.5 Compare and contrast the cost of a specific project using different materials.</td>
<td>• Demonstrate project and workspace management by implementing systems of organization for their workspace.</td>
<td>• Given a specific task, each student will construct a particular shop fixture that is designed to serve a purpose in cabinet construction assembly.</td>
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<td>A3.6 Develop a materials list, cut list, and cost estimate from a working drawing for a specific cabinet project.</td>
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<td>• Students will participate in ongoing shop maintenance and clean up with an emphasis on leadership and management through use of</td>
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<td>A4.0 Demonstrate proper selection and use of woodworking tools.</td>
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</table>
| Focus CTE Pathway Standards: | \begin{itemize} 
| A7.8 Demonstrate the use of a jig, template, or fixture in a production project. | \begin{itemize} 
- Students will present their research and products and organize them into their coursework portfolio. 
- \textbf{Instructors’ Note:} Skills USA is a student professional organization. The teacher will review membership and Skills USA activities to the class. Skills USA - Professional Student Organization for Industry. Students will be introduced to the Skills USA organization and may participate, at their choosing, in any year. Students participate in a variety of cabinet-making competitions and professional skill development. The competitions may be held at the local and/or regional level as conducted by Skills USA. The state competition brings together wood workers from throughout the state. The students may also move on to National competitions. 
\end{itemize} 
| A7.10 Demonstrate the use of a mass production technique (i.e., parts duplication and assembly processes). | 
| A7.14 Use the appropriate adhesives and fasteners to install different types of trim, moldings, or other edge treatments. | 
| A9.0 Understand finishes and when to apply paint, stains, sealers, varnishes, and catalyzed finishes, including water- and oil-based finishes. | 
| \end{itemize} 
| A9.2 Demonstrate cleaning procedure for various types of stains. | 
| A9.3 Select the proper type of sealer and finish coat for a specific application. | 
| A9.4 Demonstrate proper application methods for different types of sealers and finish coats. | 
| A9.5 Demonstrate cleaning procedures for various types of sealer and finish coats. | 
| Focus CTE Pathway Standards: | 
| 7.0 Responsibility and Flexibility Initiate, and participate in, a range of collaborations demonstrating behaviors that reflect personal and professional responsibility, flexibility, and respect in the Building and Construction Trade. | 
| 9.0 Leadership and Teamwork Work with peers to promote divergent and creative perspectives, effective leadership, group dynamics, team and individual decision making, benefits of workforce diversity, and conflict resolution as practiced in the SkillsUSA career technical student organization. (Direct alignment with SLS 11-12.1b) | 
| 9.1 Define leadership and identify the responsibilities, competencies, and behaviors of successful leaders. | 
| 9.2 Identify the characteristics of successful teams, including leadership, cooperation, collaboration, and effective decision-making skills as applied in groups, teams, and career technical student organization activities. | 
| 9.3 Understand the characteristics and benefits of teamwork, leadership, and citizenship in the school, community, and workplace setting. | 
| 9.4 Explain how professional associations and organizations and associated leadership development and competitive career development activities enhance academic preparation, promote career choices, and contribute to employment opportunities. | 
| 9.5 Understand that the modern world is an international community and requires an expanded global view. | 
| 9.6 Respect individual and cultural differences and recognize the importance of diversity in the workplace. | 
| 9.7 Participate in interactive teamwork to solve real Building and Construction Trades sector issues and problems. | 
| Instructors’ Note: Skills USA is a student professional organization. The teacher will review membership and Skills USA activities to the class. Skills USA - Professional Student Organization for Industry. Students will be introduced to the Skills USA organization and may participate, at their choosing, in any year. Students participate in a variety of cabinet-making competitions and professional skill development. The competitions may be held at the local and/or regional level as conducted by Skills USA. The state competition brings together wood workers from throughout the state. The students may also move on to National competitions. |
**Advanced Wood Scope and Sequence**

**Unit 5 – Tree Biology and Wood Technology**

**Length:** 3 Weeks

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**Unit Description:** In Unit 5, students build on their understanding of the biological components of trees and wood. They research, discuss and apply concepts and skills related to different kinds of wood and explore concepts such as tree species, tree/wood growth, density, grain, soft vs. hard wood, etc. They also explore systems level analysis of tree/wood growth and how various parts of the ecosystem relate to and sustain tree/wood growth. Ultimately, they make connections between tree biology and the technical elements of woodworking as well as long-term sustainability.

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**Focus Cabinetry, Millwork, and Woodworking Pathway Standards:**

| A5.0 Identify wood products and materials used in the furniture and cabinetmaking industry and describe their characteristics and use. |
| A5.1 Define the difference between a hardwood and softwood. |
| A5.2 Identify several different species of hardwood and their characteristics that are common to the cabinetmaking and millwork industry. |
| A5.3 Identify several different species of softwood and their characteristics that are common to the cabinetmaking and millwork industry. |
| A5.4 Identify common defects found in wood and list possible solutions. |
| A5.5 Identify and be able to differentiate panel products and their uses in the cabinetmaking industry. |
| A5.6 Describe the cutting and handling techniques used for sheet goods. |
| A5.7 Compare and contrast the advantages and disadvantages of sheet goods versus solid wood stock. |

**Focus Building and Construction Trades Anchor Standards:**

| 2.0 Communications Acquire and accurately use Building and Construction Trades sector terminology and protocols at the career and college readiness level for communicating effectively in oral, written, and multimedia formats. (Direct alignment with LS 9-10, 11-12.6) |

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**Key Learning Objectives & Tasks:**

- Review key concepts from the introductory course regarding tree biology and explain their learning visually, verbally, and in writing.
- Review the names and functions of the trees’ parts and describe the trees systems.
- Review wood specie articles and annotate the text to support facts of correct material usage.
- Differentiate the uses of sheet goods and panel products vs solid stock and be able to support their reasoning visually, verbally, and in writing.

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**Key Unit Assignments & Assessments:**

- Students will explore a variety of physical and multimedia artifacts/examples (including texts, which they will annotate) of various tree/wood samples.
- Students will demonstrate their knowledge of wood grain and figure by applying appropriate finishes which accent cellular characteristics of the wood.
- Given a choice of species, students will be able to correctly identify the best use of a particular wood species for a specific use.
- Students will present a brief overview of the various parts/components of a tree to one another in small groups to demonstrate their understanding of basic tree biology.
- Students research and explain the function of the interdependent systems of the tree, make connections to the larger ecosystem. They demonstrate their knowledge of the efficient and effective use of hardwoods and softwoods regarding material selection for various parts of their projects.
- Students will present their research and products and organize them into their coursework portfolio.
Unit Description: In Unit 6, students engage in a variety of advanced hands-on tasks to further enhance their understanding and practical abilities related to the use of templates, jigs, and fixtures in the woodworking design process. The tasks in which they engage allow them to demonstrate and develop the ability to improve designs, duplicate part consistency, and save time when performing milling operations. This unit prepares them to engage in the final portion of the course, which provides students with the time and space to create and manage their own advanced summative woodworking project(s).

Focus Cabinetry, Millwork, and Woodworking Pathway Standards:
A1.0 Demonstrate competence in planning, design, layout, and technical drawing interpretation for practical use in cabinetmaking and mill working.
A3.0 Interpret and apply information to develop a bill of materials, estimate the cost of materials, and develop a plan of procedures to complete a project.
A4.0 Demonstrate proper selection and use of woodworking tools.
A4.1 Demonstrate the accurate use of common measuring and layout tools.
A4.2 Select the proper layout tools for specific tasks.
A4.3 Select the proper cutting tools for specific operations (e.g., straight cuts, curves, drilling holes).
6.0 Compare and contrast the advantages and disadvantages of using laminates verses using veneers.
A7.0 Demonstrate competence in various construction processes in the cabinetmaking, furniture making, and mill working industries.
A10.0 Demonstrate proper techniques for cabinet installation.

Key Learning Objectives & Tasks:
Students will...
- Demonstrate understanding and ability to use basic jib and fixture applications.
- Demonstrate the proper selection and use of a variety of woodworking tools including templates, jigs, and fixtures.
- Compare and contrast the advantages and disadvantages of using particular tools for specific applications.
- Demonstrate knowledge of jigs and fixtures by designing and using appropriate solutions to specific questions.

Key Unit Assignments & Assessments:
- Students will utilize multiple component techniques through the use of templates and registration blocks.
- Students will demonstrate knowledge of fixture application or an operation that is considered advanced nature based on the planning, design, and number of steps involved; the task includes advance tool usage and collaboration with peer and instructor feedback.
- Students design and construct a fixture or jig to be used on a piece of woodworking equipment. They apply the appropriate understanding of the use of templates, jigs, and fixtures and describe.
- Each student will be given an assigned job directed toward the construction of a jig to be used in a shop process that deals with an advanced technique and work appropriately with their team to ensure effective project management.
Unit 7 – Advanced Student Summative Project Creation and Management

Approx. Length: 18 Weeks

**Unit Description:** Unit 7 presents the students with their summative advanced woodworking project requirement. Throughout this space of time, students brainstorm, plan, and begin designing their own advanced woodworking project or series of projects that incorporate the full array of concepts and skills acquired up to this point in the pathway. This unit allows students to demonstrate competence in planning, design, layout, technical drawing, proper selection of tools and materials, construction of processes, and the execution of product creation in the pathway. Occasionally advanced students may continue to build on previously initiated advanced woodworking projects. With the help of the instructor and peers, students may engage in review and re-teaching activities as necessary. This unit also incorporates career planning and management activities to help prepare students to successfully transition to college and career related programs and industries related to the pathway. Students integrate multiple sources of career information from diverse formats to make informed career decisions, solve problems, and manage personal career plans. As part of the summation of the course, students construct and present a portfolio of their work (e.g., images, products, written descriptions, electronic/web-based products, etc.) for use in assessment and job application.

**Focus CTE Pathway Standards:**

- **A1.0** Demonstrate competence in planning, design, layout, and technical drawing interpretation for practical use in cabinetworking and welding.
- **A2.0** Differentiate between the various furniture and cabinet styles used in the cabinet and furniture industry.
- **A3.0** Interpret and apply information to develop a bill of materials, estimate the cost of materials, and develop a plan of procedures to complete a project.
- **A4.0** Demonstrate proper selection and use of woodworking tools.
- **A5.0** Identify wood products and materials used in the furniture and cabinetmaking industry and describe their characteristics and uses.
- **A6.0** Compare and contrast the advantages and disadvantages of using laminates versus using veneers.
- **A7.0** Demonstrate competence in various construction processes in the cabinetworking, furniture making, and mill working industries.
- **A8.0** Utilize appropriate abrasives to prepare a project for a specific finish.
- **A9.0** Understand finishes and when to apply paint, stains, sealers, varnishes, and catalyzed finishes, including water- and oil-based finishes.

**Focus Cabinetry, Millwork, and Woodworking Pathway Standards:**

- **A1.0** Demonstrate competence in planning, design, layout, and technical drawing interpretation for practical use in cabinetworking and mill working.
- **A2.0** Differentiate between the various furniture and cabinet styles used in the cabinet and furniture industry.
- **A3.0** Interpret and apply information to develop a bill of materials, estimate the cost of materials, and develop a plan of procedures to complete a project.
- **A4.0** Demonstrate proper selection and use of woodworking tools.
- **A5.0** Identify wood products and materials used in the furniture and cabinetworking industry and describe their characteristics and uses.
- **A6.0** Compare and contrast the advantages and disadvantages of using laminates versus using veneers.
- **A7.0** Demonstrate competence in various construction processes in the cabinetworking, furniture making, and mill working industries.
- **A8.0** Utilize appropriate abrasives to prepare a project for a specific finish.
- **A9.0** Understand finishes and when to apply paint, stains, sealers, varnishes, and catalyzed finishes, including water- and oil-based finishes.

**Unit 7 – Advanced Student Summative Project Creation and Management (Approx. Length: 18 Weeks)**

**Objectives & Tasks:**

- Students will…
  - Demonstrate mastery of skills by selecting, designing, and building a project independently of their peers and instructor.
  - Demonstrate mastery of planning and project management by independently creating a timeline and schedule for project completion.
  - Demonstrate ability to produce high-quality projects by entering at least one project into a judged woodworking competition (i.e., San Diego County Fair Student Showcase, AWFS, etc.)
  - Integrate multiple sources to explore and integrate information from diverse formats to make informed career decisions, solve problems, and manage personal career plans; organize and use information in industry aligned portfolio of work.
  - Engage in problem solving and critical thinking related to the summative woodworking project.

**Key Learning Objectives & Tasks:**

**Key Unit Assignments & Assessments:**

- Students work with the instructor and together in pairs and as a whole group to outline the requirements for their final project and present their ideas.
- Students collaborate with the instructor and one another as necessary in the planning and execution of their summative projects (leadership emphasis).

**Summative Project-based Task:**

- Students are tasked with the creation of an advanced woodworking project or series of projects of their choice. The project includes brainstorming, planning, and designing the woodworking project or series of projects. The project must incorporate the full array of concepts and skills acquired up to this point in the pathway including planning (design, layout, technical drawing), proper selection of tools and materials, construction of processes, and the execution of product creation in the pathway.
- Students must also present their product by describing it using technical terms in detail both verbally, in writing, and via electronic means (e.g., digital photography, social media, etc.).
- The goal of the project is to produce a product of sufficient quality to enter a formal woodworking competition such as the San Diego County Fair, etc.) with the goal of placing in the competition.