Grade, Subject/Course: Advanced Wood Technology (10-12)	
Unit: Planning & Design	**__X__ Essential _____ Important _____ Compact**
Big Idea: Planning and design are the chief decision-making processes in producing furniture and cabinetry.	
STEELS/Tech and Engineering Strand: 3.5.9-12.A Use various approaches to communicate processes and procedures for using, maintaining, and assessing technological products and systems. 3.5.9-12.P Apply a broad range of design skills to a design thinking process. 3.5.9-12.U Evaluate and define the purpose of a design. 3.5.9-12.W Optimize a design by addressing desired qualities within criteria and constraints while considering trade-offs. 3.5.9-12.X Implement the best possible solution to a design using an explicit process.	**Pacing:** 1 week
Essential Questions: UEQ: What is the decision-making process in planning and designing furniture and cabinetry? LEQ: What is form vs. function? LEQ: How do you read and interpret working drawings to construct furniture and cabinetry? LEQ: What factors are considered when selecting & identifying various materials suitable for constructing furniture and cabinetry? LEQ: How do you prepare a bill of materials to determine the cost of a woodworking project? LEQ: What are the steps and procedures for squaring a board?	**Understandings:** Students will know that… ● Form and function in woodworking are important features of furniture and cabinetry. ● Design elements and principles are used in the production process to create functional and attractive woodworking furniture and cabinetry. ● Working drawings describe project specifications when constructing furniture and cabinetry. ● Squaring a board follows a distinct set of steps and procedures to prepare lumber for making furniture and cabinetry.
Knowledge: Form vs. Function Working Drawings Selecting & Identifying Materials Bill of Materials Woodworking Processes and Operations	**Do/Skills:** Students will be able to… ● Read and interpret working drawings to construct furniture and cabinetry. ● Select and identify materials that will satisfy the form and function of the design. ● Generate a bill of materials that lists the parts, materials, and cost of a woodworking project. ● List the processes and operations used when squaring a board to produce furniture and cabinetry parts.

Vocabulary: Form, Function, Working Drawings, Plan Procedures, Squaring A Board, Bill of Materials (BOM), Board Foot, Wood Species	**Core Resources:** Schoology LMS
Common Assessment(s): 1. Bill of Materials 2. Planning & Design Activities	**Supplemental Resources:** Project Working Drawings

Grade, Subject/Course: Advanced Wood Technology (10-12)	
Unit: Safety	**__X__ Essential _____ Important _____ Compact**
Big Idea: Safety is an inherent part of the furniture and cabinetry woodworking process.	
STEELS/Tech and Engineering Strand: 3.5.9-12.AA Safely apply an appropriate range of making skills to a design thinking process. 3.5.9-12.L Interpret laws, regulations, policies, and other factors that impact the development and use of technology.	**Pacing:** 1 week
Essential Questions: UEQ: Why is safety an attitude not a set of rules? LEQ: What PPE is needed to safely operate tools and machines in making furniture and cabinetry? LEQ: Why is safety so important in the woodworking lab? LEQ: What are the machine safety rules and operations used in making furniture and cabinetry? LEQ: Why is it important to understand force when operating hand or power tools? LEQ: Why are cleanliness and organization important in the woodworking lab?	**Understandings:** Students will know that… ● General safety rules for the lab need to be followed based on the PDE safety guide. ● Each machine has specific safety rules and operational processes. ● Rules about the production environment are regulated by the Occupational Safety & Health Association (OSHA). ● Safety Data Sheets (SDS) contain information about hazardous chemicals in the workplace. ● There are codes for fire prevention and safety. ● Lock Out Tag Out procedures are in place to prevent accidents when using machines. ● General lab maintenance and clean-up procedures are necessary to maintain a safe work environment.
Knowledge: General Lab Safety Personal Protective Equipment (PPE) Machine Specific Safety Lab Maintenance	**Do/Skills:** Students will be able to… ● Appropriately use personal protective equipment in the production lab. ● Safely operate all power tools and equipment with 100% accuracy. ● Correctly use SDS sheets to gather information on chemicals and products used in the production lab. ● Recognize possible fire situations, correctly select the appropriate fire extinguisher, and use it efficiently to extinguish a fire. ● Properly maintain established clear standards for student work areas.
Vocabulary: OSHA, SDS, LOTO, Danger Zone, Exposure, Personal Protective Equipment	**Core Resources:** Schoology LMS

Common Assessment(s):	**Supplemental Resources:**
1. General Safety Quiz 2. Health and Safety Textbook Activity Guides	PDE Safety Guide ITEEA Safety Resources Modern Cabinetmaking Textbook

Grade, Subject/Course: Advanced Wood Technology (10-12)	
Unit: Joinery	**__X__ Essential _____ Important _____ Compact**
Big Idea: High-quality wood joints affect the strength and stability of furniture and cabinetry.	
STEELS/Tech and Engineering Strand: 3.5.9-12.M Develop a device or system for the marketplace. 3.5.9-12.N Analyze and use relevant and appropriate design thinking processes to solve technological and engineering problems. 3.5.9-12.O Apply appropriate design thinking processes to diagnose, adjust, and repair systems to ensure precise, safe, and proper functionality. 3.5.9-12.P Apply a broad range of design skills to a design thinking process. 3.5.9-12.V Apply principles of human-centered design. 3.5.9-12.AA Safely apply an appropriate range of making skills to a design thinking process. 3.5.9-12.OO Use project management tools, strategies, and processes in planning, organizing, and controlling work. 3.5.9-12.QQ Implement quality control as a planned process to ensure that a product, service, or system meets established criteria.	**Pacing:** 6 weeks
Essential Questions: UEQ: How are high-quality wood joints produced to increase the strength and stability of furniture and cabinetry? LEQ: What measuring, marking, and layout techniques and tools are essential for producing high-quality wood joinery? LEQ: How are woodworking tools and machines used to produce high-quality wood joints? LEQ: Which jigs and fixtures provide accuracy and repeatability when producing high-quality wood joinery?	**Understandings:** Students will know that… ● Accurate measuring, marking, and layout techniques and tools are essential for high-quality wood joinery. ● When selecting wood joints for a project, consider the strength, appearance, and difficulty in fabrication. ● Jigs and fixtures provide accuracy and precision with repeatability.

Knowledge:	**Do/Skills:** Students will be able to…
Measurement Marking and Layout Techniques and Tools Wood Joints Woodworking Tools and Machines Jigs and Fixtures	● Measure, mark, and lay out wood joints with accuracy and precision. ● Produce high-quality wood joints for strength and stability in furniture and cabinetry using tools and machines. ● Utilize jigs and fixtures with repeatability when producing high-quality wood joints.
Vocabulary: Butt, Biscuit, Dowel, Rabbet, Dado, Lap, Miter, Mortise & Tenon, Dovetail, Steel Rule, Try Square, Marking Gauge, Wood Chisel, Jig, Fixture	**Core Resources:** Schoology LMS Autodesk Fusion 360 MultiCam CNC Router
Common Assessment(s): 1. Chapter 8: Butt, Biscuit, and Dowel Joints TAG 2. Chapter 9: Rabbet Joint TAG 3. Chapter 10: Dado Joint TAG 4. Chapter 11: Lap Joint TAG 5. Chapter 12: Miter Joint TAG 6. Chapter 13: Mortise and Tenon Joint TAG 7. Chapter 14: Dovetail Joints and Casework TAG 8. Chapter 20: Measuring and Laying Out Materials TAG 9. Cabinet Progress Evaluation 1 10. Door Progress Evaluation 2 11. Drawer Progress Evaluation 3	**Supplemental Resources:** Wood Technology and Processes Textbook Modern Cabinetmaking Textbook Joinery Basics | Woodworking | Howcast How To Cut Wood Joints | Generation Next | Ask This Old House Setting up a Tenoning Jig How To Edge Glue a Wood Panel | Basic Woodworking Skill | Woodworker's Journal How To Use a Wood Chisel | Woodworking | Howcast How To Make A Miter Joint | Wood Magazine How To Sharpen A Chisel | Paul Sellers How To Make Rabbets, Dadoes, and Grooves | Wood Magazine How To Make A Half-Lap Joint | Wood Magazine How To Create Strong End Grain Joints | Wood Magazine

Grade, Subject/Course: Advanced Wood Technology (10-12)	
Unit: Construction & Assembly	**__X__ Essential _____ Important _____ Compact**
Big Idea: Woodworking construction techniques and assembly procedures are used in modern furniture and cabinetmaking.	
STEELS/Tech and Engineering Strand: 3.5.9-12.M Develop a device or system for the marketplace. 3.5.9-12.N Analyze and use relevant and appropriate design thinking processes to solve technological and engineering problems. 3.5.9-12.O Apply appropriate design thinking processes to diagnose, adjust, and repair systems to ensure precise, safe, and proper functionality. 3.5.9-12.P Apply a broad range of design skills to a design thinking process. 3.5.9-12.V Apply principles of human-centered design. 3.5.9-12.AA Safely apply an appropriate range of making skills to a design thinking process. 3.5.9-12.OO Use project management tools, strategies, and processes in planning, organizing, and controlling work. 3.5.9-12.QQ Implement quality control as a planned process to ensure that a product, service, or system meets established criteria.	**Pacing:** 6 weeks
Essential Questions: UEQ: Which construction techniques and assembly procedures are used in modern furniture and cabinetmaking? LEQ: Why is squaring a board to the correct size essential during construction and before assembly begins? LEQ: What is the purpose of dry-fitting parts before assembly? LEQ: What is the purpose of adhesives and how are glues selected for different project conditions? LEQ: How do you correctly glue up and clamp wood stock during assembly?	**Understandings:** Students will know that… ● Squaring a board to the correct size is important to the fit of parts during the construction and assembly of furniture and cabinetry. ● Dry-fitting parts during preassembly ensures joints fit snugly and the project is square. ● Adhesives bond wood pieces together permanently, creating strong and durable joints. ● Clamps are versatile tools that serve to temporarily hold work securely in place during gluing and assembly.

Knowledge: Squaring A Board Door Construction Drawer Construction Table & Cabinet Construction Gluing & Clamping Fixing Woodworking Mistakes	**Do/Skills:** Students will be able to… ● Construct and assemble table and cabinet parts for furniture or cabinetry. ● Construct and assemble door parts for furniture or cabinetry. ● Construct and assemble drawer parts for furniture or cabinetry.
Vocabulary: Adhesive, Door Rails, Door Stiles, Door Panel, Groove, Kerf, Bevel, Drawer Box, Drawer Face, Drawer Box Bottom, Legs, Aprons, Drawer Guides, Edge-to-Edge Bonding, Face-to-Face Bonding, Hand Screw Clamp, Bar Clamp	**Core Resources:** Schoology LMS
Common Assessment(s): 1. Cabinet Progress Evaluation 1 2. Door Progress Evaluation 2 3. Drawer Progress Evaluation 3	**Supplemental Resources:** Build Shaker Cabinet Doors With Table Saw | New to Woodworking? | Training Hands Academy How To Make A Traditional Dovetailed Drawer | Paul sellers How To Make Beveled Panels on the Tablesaw | WOOD magazine

Grade, Subject/Course: Advanced Wood Technology (10-12)	
Unit: Hardware & Fasteners	**__X__ Essential _____ Important _____ Compact**
Big Idea: Hardware and mechanical fasteners add beauty and functionality to furniture and cabinetry.	
STEELS/Tech and Engineering Strand: 3.5.9-12.M Develop a device or system for the marketplace. 3.5.9-12.N Analyze and use relevant and appropriate design thinking processes to solve technological and engineering problems. 3.5.9-12.O Apply appropriate design thinking processes to diagnose, adjust, and repair systems to ensure precise, safe, and proper functionality. 3.5.9-12.P Apply a broad range of design skills to a design thinking process. 3.5.9-12.V Apply principles of human-centered design. 3.5.9-12.AA Safely apply an appropriate range of making skills to a design thinking process. 3.5.9-12.OO Use project management tools, strategies, and processes in planning, organizing, and controlling work. 3.5.9-12.QQ Implement quality control as a planned process to ensure that a product, service, or system meets established criteria.	**Pacing:** 2 weeks
Essential Questions: UEQ: What main purposes do hardware and fasteners serve in furniture and cabinetry? LEQ: Why is it important to consider whether to mount hardware before or after finishing? LEQ: How are knobs and pulls selected and installed for function and appearance? LEQ: How are different hinges selected and installed to serve specific cabinet styles? LEQ: How are mechanical fasteners selected and installed to join parts together?	**Understandings:** Students will know that… ● Hardware serves many functions that add beauty, convenience, and functionality to furniture and cabinetry. ● Mechanical fasteners are hardware devices that are used to join parts together by creating a non-permanent bond.

Knowledge: Hardware (Knobs, Pulls, & Hinges) Fasteners Layout & Installation Techniques	**Do/Skills:** Students will be able to… ● Select and install knobs and pulls with precision and functionality. ● Select and install hinges to function properly in various cabinet styles. ● Select and install mechanical fasteners in furniture and cabinetry construction.
Vocabulary: Knobs, Pulls, Scratch Awl, Pilot Hole, Countersink, Offset Knife Hinge, Fastener, Wood Screw, American Scrtew Wire Gauge, Phillips-head Screwdriver, Standard Screwdriver	**Core Resources:** Schoology LMS
Common Assessment(s): 1. Fasteners Textbook Activity Guide 2. Door Progress Evaluation 2 3. Drawer Progress Evaluation 3 4. Project Progress Evaluation 4	**Supplemental Resources:** Wood Technology and Processes Textbook How to Install Offset Knife Hinges Choosing The Right Size Pre-Drill Bit | Beginner

Grade, Subject/Course: Advanced Wood Technology (10-12)	
Unit: Staining & Finishing	**__X__ Essential _____ Important _____ Compact**
Big Idea: A quality finish protects the durability of wood and increases the aesthetic appearance of furniture or cabinetry.	
STEELS/Tech and Engineering Strand: 3.5.9-12.M Develop a device or system for the marketplace. 3.5.9-12.N Analyze and use relevant and appropriate design thinking processes to solve technological and engineering problems. 3.5.9-12.O Apply appropriate design thinking processes to diagnose, adjust, and repair systems to ensure precise, safe, and proper functionality. 3.5.9-12.P Apply a broad range of design skills to a design thinking process. 3.5.9-12.Q Implement and critique principles, elements, and factors of design. 3.5.9-12.V Apply principles of human-centered design. 3.5.9-12.AA Safely apply an appropriate range of making skills to a design thinking process. 3.5.9-12.OO Use project management tools, strategies, and processes in planning, organizing, and controlling work. 3.5.9-12.QQ Implement quality control as a planned process to ensure that a product, service, or system meets established criteria.	**Pacing:** 2 weeks
Essential Questions: UEQ: How does a quality finish protect the durability of wood and increase the aesthetic appearance of furniture or cabinetry? LEQ: What are mill marks and how can they be removed before the project is finished? LEQ: What is the purpose of fillers? LEQ: What are the procedures for wiping stains? LEQ: What is the purpose of a sealer and how are sealers applied? LEQ: How are clear surface finishes applied to achieve a fine topcoat?	**Understandings:** Students will know that… ● Mill marks and all traces of glue must be removed before staining or finishing. ● A filler should be applied to open-grained or semi-porous woods for a smooth surface finish. ● A sealer provides a barrier coat between the stain or filler and the top coating. ● Surface finishes produce a tough, protective topcoat and brighten the stain color or natural wood.

Knowledge: Preparing For A Finish Applying Stains & Finishes	**Do/Skills:** Students will be able to… ● Prepare for finishing by removing mill marks and correcting defects. ● Apply a filler to close the pores of open-grained and semi-porous woods. ● Select and apply a stain to emphasize the grain and add color to the wood surface. ● Apply a sealer to seal the porous wood and act as the foundation for surface coats of finish. ● Select and apply surface finishes to produce a fine topcoat on a piece of furniture or cabinetry.
Vocabulary: Stain, Finish, Filler, Mill Marks, Polyurethane, Solvent, Tack Rag, Abrasives	**Core Resources:** Schoology LMS
Common Assessment(s): 1. Preparing For A Finish Textbook Activity Guide 2. Applying Stains and Finishes Textbook Activity Guide 3. Project Progress Evaluation 4	**Supplemental Resources:** Wood Technology and Processes Textbook Modern Cabinetmaking Textbook Staining School 101: The Basics of Staining Wood Finishing School 101: The Basics of Finishing Wood