Wood 1: Introduction to Woodworking

Content Area: **Science**
Course(s): **Wood 1 (s)**
Time Period: **1st Semester**
Length: **23-25 Weeks**
Status: **Not Published**

Course Overview: Objectives, benchmarking and screening plan

Course Overview:

Woodshop I is an introductory hands-on course in woodworking, safety, and basic construction processes. Students learn how to work safely in a woodshop; accurately measure, mark, and lay out projects; use hand tools and introductory power tools; and build small functional projects using basic joinery and finishing techniques. The course emphasizes safety, craftsmanship, problem solving, and real-world applications in architecture, construction, and theatre/set design.

Throughout the course, students move from foundational skills (safety, measurement, and hand tools) to more complex tasks (power tools, joinery, finishing, and small projects). They complete a progression of structured activities, performance tasks, and projects that allow them to demonstrate growth in technical skills, safe work habits, and responsibility.

Overall Course Objectives:

By the end of Woodshop I, students will be able to:

- Demonstrate consistent, safe work habits in the woodshop, including correct use of PPE, adherence to safety rules, and appropriate response to unsafe conditions.
- Identify and correctly use essential safety equipment and procedures for both hand tools and power tools.
- Accurately read and use a standard tape measure down to at least 1/16".
- Use layout tools (square, marking gauge, ruler/tape, pencil) to measure, mark, and plan cuts.
- Read and interpret simple project drawings, dimensions, and cut lists; plan efficient cutting and construction sequences.
- Safely use common hand tools (hand saws, chisels, mallets, block planes, sanding tools, drills) to cut, shape, smooth, and drill wood.
- Safely operate introductory power tools (band saw, scroll saw, drill press, stationary/belt/disc sanders, router with basic jigs) following clear written and visual procedures.
- Explain the purpose, basic parts, and key safety rules for major tools and machines.
- Distinguish between hardwoods and softwoods and describe basic wood properties, grain direction, and their impact on cutting and finishing.
- Lay out, cut, and assemble basic joints (edge joints, lap joints, dowel and pocket hole joinery) with acceptable accuracy and fit.

- Prepare surfaces and apply basic finishes (sanding, stain, polyurethane) to protect and enhance projects.
- Plan and build small woodworking projects from start to finish, including interpreting plans, measuring and cutting parts, assembling, sanding, and finishing.
- Reflect on their own work and process through written responses, explaining what they did well, what challenges they encountered, and what they would change next time.
- Make connections between woodworking skills and real-world applications (architecture and construction careers, theatre set design, home and workplace projects).
- Work collaboratively in pairs and groups for safety walkthroughs, project planning, and build tasks.
- Support diverse learners, including students with disabilities and multilingual learners, through visual supports, peer collaboration, and flexible ways of demonstrating understanding.
- Take on leadership roles (e.g., safety coach, demo helper, project team leader) when appropriate.

Assessment Overview:

- Safety & Knowledge Checks
- Performance Tasks & Skill Checks
- Projects
- Writing & Reflection

Course Name, Length, Date of Revision and Curriculum Writer

Course Name: Wood 1: Introduction to Woodworking

Length: Semester Course

Date of Revision: 4/13/26

Curriculum Writer: Catherine Zank

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Unit 1: Introduction and Safety

Content Area: **Science**
Course(s): **Wood 1 (s)**
Time Period: **1st Marking Period**
Length: **1-2 Weeks**
Status: **Not Published**

Summary of the Unit

In Unit 1, students are introduced to the woodshop environment with a strong emphasis on safety as the foundation for all future work. They learn to identify and describe essential safety equipment (such as safety goggles, hearing protection, dust masks, push blocks, fire extinguishers, and first aid kits) and demonstrate proper use of personal protective equipment (PPE). Students study, discuss, and practice key woodshop safety rules, participate in a safety walkthrough of the shop, and analyze unsafe scenarios to recognize and correct hazardous behaviors and conditions. Through discussions, videos, interactive activities, and written reflections, students build an understanding that safety is a shared responsibility and a non-negotiable part of working in a woodshop.

Enduring Understandings

- Safety is a shared, ongoing responsibility; my choices in the shop affect both me and others.
- Most woodshop accidents are preventable when safety rules, PPE, and procedures are understood and consistently followed.
- Knowing how to identify and correctly use safety equipment is essential for working confidently and responsibly with tools and machines.
- Being able to spot unsafe behaviors and conditions allows me to take action before injuries occur.
- Safe habits, once developed early, support successful, high-quality work in all future woodworking projects.

Essential Questions

- Why is safety in the woodshop not optional, but essential?
- What responsibilities do I have for my own safety and the safety of others in the shop?
- How do safety equipment and PPE protect us from common hazards in the woodshop?
- How can I recognize unsafe behaviors or conditions before an accident happens?
- How do clear rules and routines help prevent accidents in a woodworking environment?

Unit Summative Assessment and Alternate Assessment Options

Safety Quiz – Checks understanding of safety equipment, PPE, basic shop rules, and common hazards (can include matching, multiple choice, and short scenario questions).

Safety Scavenger Hunt / Walkthrough Check – Students locate and identify exits, fire extinguisher, first aid kit, PPE stations, and machine safety zones to show they can navigate the shop safely.

“What’s Wrong With This Picture?” Written Response – Students analyze an unsafe shop image, identify at

least three hazards, name the rule or PPE involved, and explain how to fix each problem.

Safety Incident Reflection – Students describe a real or imagined woodshop accident, identify which rules/PPE were ignored, and explain how it could have been prevented and what their responsibility is.

Safety Contract Add-On Paragraph – After signing the safety contract, students write a short paragraph stating three specific safety choices they will commit to each class and possible consequences for not following them.

Safety Posters and/or Tool ID Booklets – Group or individual products that illustrate key safety rules and correctly label safety equipment, used as a performance-based check of understanding.

Resources

Videos:

The definitive guide to woodworking safety. BACK TO BASICS.

Kid Snippets: "Wood Shop Safety" (Imagined by Kids)

General Safety Rules

PPE E-Learning

High School Woodshop General Safety

Handouts:

Osha Woodshop Safety Tips https://www.oshaeducationcenter.com/woodworking-safety/

Sample Student Safety Contract

https://www.oswego.edu/art/sites/www.oswego.edu.art/files/woodshop_hs.pdf

Unit Plan

Topic/Selection Timeframe	General Objectives	Instructional Activities	Assessments
Unit 1: Introduction and Safety 1- 2 weeks	SWBAT identify the three pathways in the Architecture & Construction career cluster (Design/Pre-Construction, Construction, Maintenance/Operations). SWBAT match at least 4	Mini-Lesson: Career Cluster Snapshot Short teacher-led overview (slides or board): Architecture & Construction Career Cluster • Design/Pre-Construction (architect, civil engineer,	Discussion and Response

	careers to the correct A&C pathway. SWBAT distinguish between labor and management roles in A&C careers. SWBAT explain how labor and management must work together on a construction project. SWBAT describe at least one way an A&C project impacts society and one way it impacts the economy. SWBAT select and justify at least 4 roles needed to complete a community construction project. SWBAT present their project team and explain each role's job and labor/management category to the class. SWBAT Identify and describe the function of essential woodshop safety equipment. SWBAT Demonstrate proper use of PPE.	drafter). • Construction (carpenter, mason, electrician, plumber, equipment operator). • Maintenance/Operations (HVAC tech, building maintenance worker, facility manager). Society & Economy connections • Society: healthy buildings, safe roads, learning spaces, disaster-resistant housing. • Economy: construction jobs, materials suppliers, local businesses that rely on buildings. Labor vs. Management (9.3.12.AC.5) • Labor – skilled tradespeople doing hands-on work (carpenters, electricians, masons, HVAC techs). • Management – planners/supervisors (architects during design, project managers, general contractors, site supervisors). Group Task: "Design a Community Project Team" Set-up: • Put students in groups of 3–4. • Each group draws a project card (or you assign one): o New skate park or playground	Project Cards

	SWBAT Explain and apply basic shop safety rules SWBAT Identify unsafe behaviors or conditions in the shop. SWBAT locate and identify key safety stations and features in the woodshop (exits, fire extinguisher, first aid kit, eye-wash, PPE, machine safety zones) during a guided safety walkthrough or scavenger hunt. SWBAT analyze visual or real-life shop scenarios to identify at least three unsafe behaviors or conditions and explain how to correct each one. SWBAT match common safety equipment and PPE to the hazards they protect against with a high level of accuracy (e.g., 80% or better on a game or quiz). SWBAT describe a real or imagined woodshop accident in writing, identify which safety rules or PPE were ignored, and explain how the accident could have been prevented.	○ Renovating a school woodshop ○ Building a small business (coffee shop, barbershop) ○ Fixing up an old community center ○ Resurfacing a local road and adding sidewalks Hand out: • A simple career list with 10–12 roles, each labeled with pathway (DES/CST/MO) and L (Labor) or M (Management). • A graphic organizer with three columns: Design/Pre-Construction – Construction – Maintenance/Operations. Presentations Each group has 2–3 minutes to present: • Project they chose. • Key roles (at least 4) and whether each is labor or management. • One example of how labor and management must work together on their project. • One society impact and one economic impact of their project. • "Which project do you think would create the most jobs? Why?" • "Which role seemed the most important for safety?"	Presentations

	SWBAT articulate, in writing, at least three specific safety choices they will commit to each class and explain the possible consequences of not following them. SWBAT write a brief explanation of what makes a given shop situation unsafe, name the safety rule being broken, and describe the exact steps needed to fix it.	Introduction/Class Discussion: Begin with essential questions and discussions of why woodshop safety isn't optional- but essential, and that most accidents are preventable. Journal: Why is safety everyone's responsibility? Safety Equipment Overview: Display each item, explain its purpose, and allow students to handle it. (safety goggles, hearing protection, dusk mask, push block/stick, fire extinguisher, first aid kit, etc.) Woodshop Safety Rules: Present and discuss a list of essential rules. Use visuals, stories, or examples of what can go wrong. Have students work in groups to create safety posters and tool ID booklets. Video: Safety video from OSHA or YouTube for visuals. The definitive guide to woodworking safety. BACK TO BASICS. Interactive Activities: 1. Safety walkthrough (or scavenger hunt): Tour the shop together, pointing out safety stations, signage, and machine zones. 2. What's Wrong with This Picture?: Show photos of unafe setups or staged "bad habits." Students	Group Discussion Safety Posters Tool ID Booklet

		identify the mistake and explain how to correct it. 3. Matching game/ Online quiz game: Match safety items to their function. Optional Extension Activities: Safety Incident Reflection Prompt: "Describe a real or imagined woodshop accident. What went wrong, which safety rules were ignored, and how could it have been prevented? What is your responsibility in preventing accidents in our shop?" Safety Contract Add-On Paragraph After the safety contract, students write a short paragraph: "In my own words, I promise to… (list 3 specific safety choices I will make every class). If I break these, the possible consequences are…" 'What's Wrong With This Picture?' Written Explanation Choose one of the scenarios you used in class and have them write: • what is unsafe • which rule it breaks • exactly what they would say/do to fix it.	Scavenger Hunt Photo Response Exit Ticket Safety Quiz Safety Contract Writing Reflections

Standards for Course Content Area and Cross Content Standards Addressed

9.3.12.AC.1	Use vocabulary, symbols and formulas common to architecture and construction.
9.3.12.AC.2	Use architecture and construction skills to create and manage a project.
9.3.12.AC.3	Comply with regulations and applicable codes to establish and manage a legal and safe workplace.
9.3.12.AC.4	Evaluate the nature and scope of the Architecture & Construction Career Cluster and the role of architecture and construction in society and the economy.

9.3.12.AC.5	Describe the roles, responsibilities, and relationships found in the architecture and construction trades and professions, including labor/management relationships.
9.3.12.AC.7	Describe career opportunities and means to achieve those opportunities in each of the Architecture & Construction Career Pathways.
9.3.12.AC-CST.3	Implement testing and inspection procedures to ensure successful completion of a construction project.
9.3.12.AC-CST.5	Apply practices and procedures required to maintain jobsite safety.
9.3.12.AC-CST.8	Demonstrate the construction crafts required for each phase of a construction project.
9.3.12.AC-CST.9	Safely use and maintain appropriate tools, machinery, equipment and resources to accomplish construction project goals.
9.3.12.AC-MO.1	Recognize and employ universal construction signs and symbols to function safely in the workplace.

Suggested Modifications for Students with Disabilities, 504 eligible, Multilingual Learners, At Risk Students and Gifted Students

Students with Disabilities (including students with 504 plans) – Wood 1 (All Units)

Content & Directions

- Provide simplified, step-by-step directions for key procedures and safety rules, using pictures/icons whenever possible.
- Use visuals for all major tools, machines, and safety equipment (photo + label: goggles, hearing protection, dust mask, push block, fire extinguisher, first aid kit, etc.).
- Highlight or bold key safety and process words (danger, must, never, always, PPE, stop, off, on, measure, mark, cut, clamp).
- Break longer texts (safety contracts, reflections, project explanations) into short chunks with guiding questions or prompts.
- Offer sentence starters and writing frames for written work across units
- When introducing new tools or skills, provide clear, numbered steps and keep language concrete.

Process & Participation

- Allow extra time for:
    - Safety walkthroughs and scavenger hunts.
    - “What’s Wrong With This Picture?” activities.
    - Safety quizzes and written reflections.
    - Hands-on practice with measurement, layout, hand tools, and power tools.
- Let students work with a partner or small group during:

    - Safety scavenger hunts.
    - Matching games (PPE to hazard, tools to function).
    - Poster creation, tool ID booklets, and simple planning activities.
- Provide checklists for recurring tasks, such as:
    - Before class: put on goggles, tie hair back, no loose jewelry, secure loose clothing, clear workspace.
    - Before using a tool: get teacher permission, put on PPE, check tool condition, clear area.
    - When I see something unsafe: 1) Stop, 2) Move away, 3) Tell the teacher.
- Frequently model and practice safe behavior and tool procedures, then have students repeat, explain, or demonstrate the steps back.
- Offer guided notes, graphic organizers, and partially completed diagrams for complex ideas (e.g., project plans, cut lists, grain direction).

Environment & Supports

- Seat students where they can clearly see demos, visuals, and the board, and easily access safety equipment.
- Use consistent color coding throughout the shop and on diagrams:
    - Red = danger zones / do not cross.
    - Green = exits / first aid.
    - Blue = PPE stations / eye-wash.
- Provide frequent breaks or movement opportunities (e.g., passing out materials, helping with the safety walkthrough) if attention and regulation are a challenge.
- Implement all IEP and 504 accommodations, which may include:
    - Read-aloud or clarified directions for quizzes and written tasks.
    - Reduced number of items or shortened assignments.
    - Repeated directions, chunked tasks, and frequent check-ins.
    - Alternative formats for demonstrating understanding (oral response, checklist, labeled diagram, guided template instead of open-ended paragraph).

Multilingual Learners (MLL) – Wood 1 (All Units)

Vocabulary & Language Support

- Pre-teach key course vocabulary with pictures and simple definitions for each unit (e.g.,

safety, rule, accident, emergency, hazard, PPE, goggles, push block, tape measure, grain, plan, cut list, joint, clamp).

- Maintain a Wood 1 word wall with images, labels, and short, student-friendly definitions.
- Provide a picture glossary (paper or digital) that students can use across the semester.
- Allow the use of translation tools and/or bilingual dictionaries when appropriate, especially for directions and reflections.

Instructional Support

- Use short, clear sentences when explaining rules and procedures, and model while you talk (show, point, demonstrate).
- Pair Multilingual Learners with a supportive peer buddy for:
    - Safety walkthroughs and scavenger hunts.
    - “What’s Wrong With This Picture?” activities.
    - Matching games, safety posters, tool ID booklets.
    - Measurement, layout, and basic joinery practice.
- Check comprehension with actions and demonstrations, not only verbal questions, for example:
    - “Show me how to wear goggles correctly.”
    - “Point to the fire extinguisher/exit/first aid kit.”
    - “Show me where you would stand to stay safe.”
    - “Show me how you would measure 6 ½ inches.”
- Provide visual supports for abstract concepts:
    - Diagrams of measurement marks, plans, cut lists, and grain direction.
    - Step-by-step posters near key tools.
- Allow alternative ways to respond (drawing, labeling, word banks, sentence frames, oral explanation) especially early in the semester.

Gifted & Advanced Students – Wood 1 (All Units)

Depth and Complexity

- Add extension questions during discussions and reflections, for example:

- “Which shop rule or safety practice do you think is most important and why?”
- “How could we redesign the shop or procedures to make them safer and more efficient?”
- “Why do accidents or mistakes still happen even when people know the rules and procedures?”

- Ask students to analyze real or historical incidents (shop accidents, structural failures, tool misuse) or complex build problems and:
  - Identify multiple causes.
  - Separate human error from system/design issues.
  - Propose changes to prevent or reduce risk in the future.
- Challenge them to connect safety, measurement, tool choice, and joinery to real-world quality standards (e.g., building codes, tolerances, durability).

Leadership & Responsibility

- Assign lead roles in group activities across units, such as:
  - Team leader during safety scavenger hunts or measurement relays.
  - “Safety coach” who checks that posters, tool ID booklets, or procedures use accurate rules and vocabulary.
  - Demonstration helper who models proper PPE use, measurement technique, or basic tool setup at the start of class.
- Have them design and promote a class safety or quality campaign, such as:
  - Safety slogan and visual posters.
  - Short announcements or mini-lessons for peers.
  - A class goal (e.g., number of days with 100% PPE use or accurate cleanup).

Advanced Products & Choice

- For written and performance tasks, invite more complex products
- Offer choice in product for demonstrating understanding throughout the semester, such as: Detailed written reflection or technical explanation. Mini safety or training slideshow. New-student safety guide or measurement/checklist tool. Short video or diagram-based tutorial (if allowed by your setting).
- Encourage ongoing independent observation and improvement

Computer Sci Design Thinking

CS.9-12.8.1.12.AP.5	Decompose problems into smaller components through systematic analysis, using constructs such as procedures, modules, and/or objects.

CS.9-12.8.1.12.AP.8	Evaluate and refine computational artifacts to make them more usable and accessible.
CS.9-12.8.1.12.DA.1	Create interactive data visualizations using software tools to help others better understand real world phenomena, including climate change.
CS.9-12.8.1.12.DA.5	Create data visualizations from large data sets to summarize, communicate, and support different interpretations of real-world phenomena.
CS.9-12.8.1.12.DA.6	Create and refine computational models to better represent the relationships among different elements of data collected from a phenomenon or process.
CS.9-12.8.2.12.EC.2	Assess the positive and negative impacts of emerging technologies on developing countries and evaluate how individuals, non-profit organizations, and governments have responded.
	Engineering design evaluation, a process for determining how well a solution meets requirements, involves systematic comparisons between requirements, specifications, and constraints.
	Choices individuals make about how and where data is organized and stored affects cost, speed, reliability, accessibility, privacy, and integrity.

Career Readiness, Life Literacies and Key Skills Practice

9.2.12.CAP.4	Evaluate different careers and develop various plans (e.g., costs of public, private, training schools) and timetables for achieving them, including educational/training requirements, costs, loans, and debt repayment.
9.2.12.CAP.5	Assess and modify a personal plan to support current interests and post-secondary plans.
9.2.12.CAP.6	Identify transferable skills in career choices and design alternative career plans based on those skills.
9.2.12.CAP.7	Use online resources to examine licensing, certification, and credentialing requirements at the local, state, and national levels to maintain compliance with industry requirements in areas of career interest.
9.2.12.CAP.8	Determine job entrance criteria (e.g., education credentials, math/writing/reading comprehension tests, drug tests) used by employers in various industry sectors.

Unit 2: Measurement and Layout

Content Area: **Science**
Course(s): **Wood 1 (s)**
Time Period: **1st Marking Period**
Length: **2-3 weeks**
Status: **Not Published**

Summary of the Unit

In Unit 2, students learn the foundational measuring and planning skills needed to build accurate, safe woodworking projects. They practice reading a standard tape measure down to 1/16" and applying those measurements to real wood cuts. Students are introduced to basic woodworking plans, dimensions, and cut lists, and they learn how to read drawings, match parts to a cut list, and plan an efficient cutting order.

Through mini-lessons, hands-on tape measure practice, relay challenges, and a "Build a Project on Paper" activity, students develop precision and confidence with measurement. They also explore common wood types (hardwoods and softwoods), compare their properties, and learn to recognize different grain types (straight, curly, wavy, interlocked) and grain faces (face, edge, end). Demonstrations and lab stations help students see why grain direction matters for cutting, planing, and finishing.

By the end of Unit 2, students can accurately read and record measurements, interpret simple project plans and cut lists, and make informed decisions about wood selection and grain direction; key skills that prepare them for tool use, joinery, and successful build projects in later units.

Enduring Understandings

- Precise measuring and layout are essential skills; even small errors can lead to poor fit, weak joints, wasted material, and safety problems.
- Being able to read and record tape measure markings down to 1/16" allows students to build projects that meet real-world tolerances and quality expectations.
- Layout tools such as the tape measure, square, marking gauge, and ruler work together to create straight, square, and repeatable lines that guide accurate cutting.
- Project drawings, dimensions, and cut lists provide a clear plan for a build; when students understand how to read them, they can confidently translate a design into correctly sized parts.
- Planning a logical, efficient cutting order helps conserve materials, reduce re-work, and support a safer, more organized workflow at the saw or bench.
- Different wood types (hardwoods and softwoods) and grain patterns have distinct properties that affect strength, appearance, and how the wood cuts, planes, and finishes.
- Understanding grain faces (face, edge, end) and grain direction helps students avoid tear-out and rough surfaces, leading to smoother, higher-quality work.
- Good measurement and layout habits developed early carry over to all later tool use, joinery, and project work in the woodshop.

Essential Questions

- How does accurate measuring and layout affect the safety, fit, and quality of a woodworking project?
- Why is it important to be able to read a tape measure down to 1/16" in the woodshop?
- How do layout tools (tape measure, square, marking gauge, ruler, pencil) help us turn a project plan into real, correctly sized parts?

- In what ways do project drawings, dimensions, and cut lists function like a “recipe” for building a project?
- How can planning an efficient cutting order save time, materials, and reduce mistakes?
- Why do wood type and grain direction matter when planning cuts, layout, and finishing?
- How can careful measurement and planning prevent common woodworking errors and project failures?

Unit Summative Assessment and Alternate Assessment Options

- Build a Project on Paper Activity-Students read a simple project drawing, fill in a blank cut list with correct dimensions, and sketch a rough cutting diagram; assesses understanding of plans, dimensions, and cut lists.
- Cut List Matching Race (Group Challenge)-Teams match labeled wood pieces to the correct items on a project plan and cut list; can be used as a performance assessment of reading cut lists and dimensions.
- Wood Sample Investigation Lab Sheet- Students’ recorded observations for each wood sample (name/best guess, hardwood/softwood, color/grain, weight, uses, cost/availability); lab sheets used as evidence of understanding wood types.
- Grain Direction Identification Stations – Grain ID Quiz / Station Worksheet
- “Measurement Mistake” Story (Narrative Writing)- Students write a short story describing a project that failed due to a measurement or planning error and explain how correct tape-measure and plan use would have prevented it.
- Cut List Explanation (How-To Writing)- Step-by-step written explanation of how they read a project drawing, used the cut list, and decided cutting order; can serve as an alternate/written summative assessment of planning skills.
- Wood Types & Grain Mini-Report- Short paragraph on one wood species: where it comes from, properties (hard/soft, common uses), and when/why they’d choose it for a project.

Resources

A. Measurement & Tape Measure

- Slides / notes: parts of a tape measure
- Slides / notes: standard inch breakdowns (½, ¼, ⅛, 1⁄16)
- Slides / notes: how to read and record fractional measurements
- Tips for accuracy list (zero hook, eye level, clear marks, etc.)
- Enlarged 1" tape measure visual with labeled fraction marks
- Class set of tape measures (or enough to share in pairs)

- Scrap wood or paper strips pre-cut for measurement practice
- Tape Measure Relay boards/strips with pre-marked lines
- Low-stakes measurement quiz (paper or digital)

B. Layout Tools & Practice

- Slides / notes: intro to layout tools (square, marking gauge, ruler/tape, pencil)
- Class set of try/combination squares
- Class set of marking gauges
- Class set of rulers / tape measures for layout
- Pencils / fine markers for layout lines
- Layout Practice Board diagram (handout or projected)
- Sample completed layout board for demonstrating expectations
- Exit ticket prompts printed or ready (e.g.,
    - "What happens if your layout lines are off by 1/8"?"
    - "One tip that helped me get straighter, more accurate lines…")

C. Plans, Cut Lists, and Dimensions

- Mini-lesson slides: Reading Plans 101 (plans, dimensions, cut lists)
- At least one sample project drawing (shelf/box) with:
    - Labeled views (front, top, side, 3D)
    - Dimensions (thickness × width × length)
    - Grain direction arrows/symbols
- Blank cut list template (copies for students)
- Build a Project on Paper worksheet printed or digital
- Cut List Matching Race materials prepared:
    - Labeled wood pieces (real or cardstock)
    - Printed project plan + cut list for each group
- Short quiz/Form on dimensions & cut lists (optional but ready)

D. Wood Types & Grain Direction

- Slides: hardwood vs. softwood, tree types, common shop species
- Slides: grain faces (face, edge, end) & grain patterns (straight, wavy, curly, interlocked)
- Slides: why grain direction matters for cutting/planing/finishing
- Wood sample set pulled and labeled (hardwoods & softwoods)
- Samples that clearly show different grain patterns and faces
- Wood Sample Investigation Lab sheet copied
- Grain Direction ID Station setup:
    - Boards/photos for straight, curly, wavy, interlocked grain
    - Boards/photos showing face/edge/end grain
    - Station worksheet with diagrams + "This board would be good for ___ because ___."
- Grain ID Quiz (paper or digital)

E. Videos (Optional / Recommended)

- Short tape measure / measurement accuracy video selected & linked
- Layout tools intro video selected & linked
- Wood types & grain direction / with-vs-against-the-grain video selected & linked
- https://youtu.be/DqKIVmu6grM?si=KTcFH6FtuGB_ItF6
- https://youtu.be/9Th4w6Avk4Y?si=je3WLgVXfLMPWwzI
- https://youtu.be/S7F6bCRBUDg?si=K0xRasQtuxXvusCm

F. Copies & Organization

- All handouts copied/posted (Relay sheet, Layout Board, Cut List templates, Lab sheets, quizzes)
- Simple rubric/checklist ready for:
    - Layout Practice Board
    - Build a Project on Paper
    - Wood Sample Lab / Grain ID
- Station bins or folders labeled (Measurement, Layout, Plans/Cut Lists, Wood & Grain)

Unit Plan

Topic/Selection Timeframe	General Objectives	Instructional Activities	Assessments
Measurement and Layout 2-3 days	SWBAT interpret and accurately read a standard tape measure down to 1/16 of an inch and apply it in measuring wood cuts. SWBAT accurately read and record measurements on a standard tape measure down to 1/16" and apply them when planning wood cuts.	Mini-Lectures/Lessons: Reading a Tape Measure: Basic parts of a tape measure, standard inch breakdowns, how to read fractions on the tape, and tips for accuracy. Visual Aids: Project or draw a zoomed-in 1" section of a tape measure. Label- ½",¼",⅛", 1/16", etc. Quiz students: "What is halfway between ¾" and 1"?" Guided Practice: Hand out actual tape measures and scrap wood or paper strips. Have students measure different lengths and points that you have presented. Correct students as needed. How to Read a Tape Measure - REALLY EASY Activity: Tape Measure Relay Challenge: Create 10 wooden boards (or paper strips) with lines marked at various lengths. Students rotate through stations and read the measurement on each board, then record their answers. Time them for added competition.	Group Discussion Low-stakes quiz Tape Measure Relay Worksheet (w/corrections)
Layout Tools (square, marking gauge, pencil, ruler)	SWBAT identify common layout tools (try square/combination square, marking gauge, pencil, ruler) and describe their	Mini-Lesson: Introduction to Layout Tools Show each tool (square, marking gauge, pencil, ruler/tape) and explain:	Direct Instruction/Group Discussion and Guided Practice

2-3 days	basic function in woodworking. SWBAT correctly measure, mark, and check a simple board using layout tools with a high level of accuracy (within 1/16"). SWBAT explain why careful layout is important for safety, accuracy, and the quality of a finished project. SWBAT accurately measure, mark, and lay out lines on a board using a ruler/tape, square, and marking gauge within 1/16", and explain how inaccurate layout can affect the quality and fit of a woodworking project	• what it is used for • how to hold it correctly • one common mistake to avoid (e.g., not holding the square tight to the edge). Demonstrate: • drawing a straight 90° line with a square • marking a consistent line with a marking gauge • measuring and marking a length with a ruler/tape and pencil. Guided Practice: Layout Basics. Give each student a small board or thick paper strip. Teacher calls out a series of tasks, such as: • "Measure and mark a line at 6 ½" using your ruler and pencil." • "Use your square to draw a square cut line across the board at your mark." • "Set your marking gauge to ¾" and mark a line along the edge of the board." • Circulate and correct grip, tool position, and accuracy. Activity: Layout Practice Board Students receive a simple layout diagram (example: a board with several lines at different measurements and one centerline). They must: • measure and mark the given lengths • draw square lines with the	Layout Practice Board Exit Response

		square • use the marking gauge to mark a consistent edge line. • Optional partner check: Students trade boards and check each other's marks with a ruler and square. Closure / Quick Discussion • Ask: "What happens to a project if your layout lines are off by even 1/8"?" • Brief class share: one tip that helped them get straighter, more accurate lines.	
Understanding plans, cut lists, and dimensions 2-3 days	SWBAT interpret woodworking plans, read dimensions, and analyze cut lists. Follow a basic set of project drawings and create a cutting plan. SWBAT use a project plan and cut list to create an efficient cutting plan for a	Mini-Lecture/Lessons: Understanding Plans, Cut Lists, and Dimensions: Reading Plans 101, What are Plans? Dimensions, Cut lists, Matching Cut Lists to Plans, Tips for Success * Make a comparison to when building something from wood, it is like baking a cake (you need a recipe). The recipe consists of a drawing, a cut list, and dimensions.* Optional visual aids for lectures: Show sample project drawings Point out different views: front, top, side, 3D, show symbols for grain direction, highlight parts of the drawing, label the pieces…etc. Visual Demo: Project a simple shelf plan- ask: "Which line is the length? Which view shows height? What does "¾" x "6" x "12" actually mean?"	Group Discussion Notetaking Build a Project on

	small project. SWBAT use a project plan and cut list to correctly identify and match wood pieces to the corresponding parts and dimensions and explain how cut lists help organize materials and prevent measurement or cutting errors.	Guided Activity: Build a Project on Paper: Hand students a simple sample project plan (Project diagram + labeled parts)- Students must identify and label parts of the plan, fill in a blank cut list with dimensions, and sketch a rough cutting diagram. Optional Group Challenge: Cut List Matching Race - Teams receive several random wood pieces with labels and a project plan and cut list. They must match each piece to the correct line item. *Administer a low-stakes quiz to students to assess their progress.	Paper Activity Cut List Matching Race Quiz
Introduction to wood types and grain direction 2-3 days	SWBAT observe, compare, and classify common hardwoods and softwoods based on properties such as color, weight, and typical uses. SWBAT identify basic grain faces (face, edge, end) and grain types (straight, wavy, curly, interlocked) and explain why grain direction matters for cutting, planing, and finishing through lab assessments.	Direct Instruction: Introduction to wood types and grain direction Part A: Wood Types- use a PowerPoint or slide show to explain hardwood vs. softwood, source trees (deciduous, coniferous, density, examples), common types of each and their properties (color, weight, cost, availability), show real samples as you go Part B: Grain Direction- define grain, types of grain (straight, curly, wavy, interlocked), discuss face grain, edge grain, end grain, importance of grain direction in cutting, planning, and finishing, what happens when you plane against the grain. **Activity Option 1 – Wood Sample**	Wood Sample Investigation Lab sheet

		Investigation Lab Student Task: Students rotate through stations and record for each sample: • Name of wood (or best guess if unlabeled) • Hardwood or softwood? • Color and grain appearance • Feels light/medium/heavy • Typical uses (guess or from a reference sheet) • Cost/availability (cheap, moderate, expensive; common/less common) Assessment: Lab Sheet Check **Activity Option 2– Grain Direction Identification Stations** At each station, place a small board or picture that clearly shows: • Straight grain • Curly grain • Wavy grain • Interlocked grain • Face grain, edge grain, end grain Provide a station worksheet with a simple diagram of a board for labeling. Student Task: At each station, students: • Label: face/edge/end grain • Circle the grain type (straight/curly/wavy/interlocked) • Write one guess: “This board would be good for ___ because	Grain ID Quiz (for the Grain Direction Identification Stations) Student Quick-Write / Exit Ticket

		___." (appearance vs strength) Assessment Option: • Grain ID Quiz **Activity 3– "With the Grain vs Against the Grain" Demonstration + Reflection** Goal: Understand why grain direction matters in planing, cutting, and sanding. Teacher Demo (safety-focused): • Show a board and mark arrows for grain direction on the face. • Demonstrate planing or scraping with the grain: smooth surface, nice shavings. • Demonstrate against the grain: tear-out, rough surface. • Optionally show similar effect with sanding or cutting if appropriate/safe. Student Quick-Write / Exit Ticket: Prompt: • "Describe what happened when planing with the grain." • "Describe what happened when planing against the grain." • "Why is grain direction important when you are cutting, planing, or finishing wood?" Optional Extentions: 1. "Measurement Mistake" Story Prompt: "Write a short story about a project that went wrong because of a measurement or planning error. Describe what the person did, what went wrong, and how using the tape measure and plans correctly would have changed the outcome."	"Measurement Mistake" Story narrative writing Cut List Explanation Wood Types & Grain Mini-Report
	SWBAT write a short narrative that explains how a measurement or planning error can cause a woodworking project to fail and describe how correct use of a tape measure and project plans would prevent the problem. SWBAT explain, in clear step-by-step writing, how to read a project drawing, use a cut list, and decide an efficient cutting order for a woodworking project.		

	SWBAT describe one common wood species by identifying its origin, key properties (hard/soft, common uses), and explain when and why they would choose it for a specific project.	2. Cut List Explanation Students choose one project plan from class and write a step-by-step explanation: • how they read the drawing • how they used the cut list • how they decided the cutting order. This can be written as a "How-To" guide for a new student. 3. Wood Types & Grain Mini-Report (Very Short) Students pick one wood type and write a short paragraph: • where it comes from • its properties (hard/soft, common uses) • when they would choose it for a project and why.	

Standards for Course Content Area and Cross Content Standards Addressed

9.3.12.AC-CST	Construction
9.3.12.AC-CST.1	Describe contractual relationships between all parties involved in the building process.
9.3.12.AC-CST.2	Describe the approval procedures required for successful completion of a construction project.
9.3.12.AC-CST.3	Implement testing and inspection procedures to ensure successful completion of a construction project.
9.3.12.AC-CST.4	Apply scheduling practices to ensure the successful completion of a construction project.
9.3.12.AC-CST.5	Apply practices and procedures required to maintain jobsite safety.
9.3.12.AC-CST.6	Manage relationships with internal and external parties to successfully complete construction projects.
9.3.12.AC-CST.7	Compare and contrast the building systems and components required for a construction project.
9.3.12.AC-CST.8	Demonstrate the construction crafts required for each phase of a construction project.
9.3.12.AC-DES.6	Apply the techniques and skills of modern drafting, design, engineering and construction to projects.
9.3.12.AC-DES.7	Employ appropriate representational media to communicate concepts and project design.

9.3.12.AC-MO	Maintenance/Operations
9.3.12.AC-MO.1	Recognize and employ universal construction signs and symbols to function safely in the workplace.

Suggested Modifications for Students with Disabilities, 504 eligible, Multilingual Learners, At Risk Students and Gifted Students

Students with Disabilities (including students with 504 plans) – Wood 1 (All Units)

Content & Directions

- Provide simplified, step-by-step directions for key procedures and safety rules, using pictures/icons whenever possible.
- Use visuals for all major tools, machines, and safety equipment (photo + label: goggles, hearing protection, dust mask, push block, fire extinguisher, first aid kit, etc.).
- Highlight or bold key safety and process words (danger, must, never, always, PPE, stop, off, on, measure, mark, cut, clamp).
- Break longer texts (safety contracts, reflections, project explanations) into short chunks with guiding questions or prompts.
- Offer sentence starters and writing frames for written work across units
- When introducing new tools or skills, provide clear, numbered steps and keep language concrete.

Process & Participation

- Allow extra time for:
    - Safety walkthroughs and scavenger hunts.
    - "What's Wrong With This Picture?" activities.
    - Safety quizzes and written reflections.
    - Hands-on practice with measurement, layout, hand tools, and power tools.
- Let students work with a partner or small group during:
    - Safety scavenger hunts.
    - Matching games (PPE to hazard, tools to function).
    - Poster creation, tool ID booklets, and simple planning activities.
- Provide checklists for recurring tasks, such as:
    - Before class: put on goggles, tie hair back, no loose jewelry, secure loose clothing, clear workspace.
    - Before using a tool: get teacher permission, put on PPE, check tool condition, clear area.

    - When I see something unsafe: 1) Stop, 2) Move away, 3) Tell the teacher.

- Frequently model and practice safe behavior and tool procedures, then have students repeat, explain, or demonstrate the steps back.

- Offer guided notes, graphic organizers, and partially completed diagrams for complex ideas (e.g., project plans, cut lists, grain direction).

Environment & Supports

- Seat students where they can clearly see demos, visuals, and the board, and easily access safety equipment.

- Use consistent color coding throughout the shop and on diagrams:

    - Red = danger zones / do not cross.

    - Green = exits / first aid.

    - Blue = PPE stations / eye-wash.

- Provide frequent breaks or movement opportunities (e.g., passing out materials, helping with the safety walkthrough) if attention and regulation are a challenge.

- Implement all IEP and 504 accommodations, which may include:

    - Read-aloud or clarified directions for quizzes and written tasks.

    - Reduced number of items or shortened assignments.

    - Repeated directions, chunked tasks, and frequent check-ins.

    - Alternative formats for demonstrating understanding (oral response, checklist, labeled diagram, guided template instead of open-ended paragraph).

Multilingual Learners (MLL) – Wood 1 (All Units)

Vocabulary & Language Support

- Pre-teach key course vocabulary with pictures and simple definitions for each unit (e.g., safety, rule, accident, emergency, hazard, PPE, goggles, push block, tape measure, grain, plan, cut list, joint, clamp).

- Maintain a Wood 1 word wall with images, labels, and short, student-friendly definitions.

- Provide a picture glossary (paper or digital) that students can use across the semester.

- Allow the use of translation tools and/or bilingual dictionaries when appropriate, especially for directions and reflections.

Instructional Support

- Use short, clear sentences when explaining rules and procedures, and model while you talk (show,

point, demonstrate).

- Pair Multilingual Learners with a supportive peer buddy for:
    - Safety walkthroughs and scavenger hunts.
    - “What’s Wrong With This Picture?” activities.
    - Matching games, safety posters, tool ID booklets.
    - Measurement, layout, and basic joinery practice.
- Check comprehension with actions and demonstrations, not only verbal questions, for example:
    - “Show me how to wear goggles correctly.”
    - “Point to the fire extinguisher/exit/first aid kit.”
    - “Show me where you would stand to stay safe.”
    - “Show me how you would measure 6 ½ inches.”
- Provide visual supports for abstract concepts:
    - Diagrams of measurement marks, plans, cut lists, and grain direction.
    - Step-by-step posters near key tools.
- Allow alternative ways to respond (drawing, labeling, word banks, sentence frames, oral explanation) especially early in the semester.

Gifted & Advanced Students – Wood 1 (All Units)

Depth and Complexity

- Add extension questions during discussions and reflections, for example:
    - “Which shop rule or safety practice do you think is most important and why?”
    - “How could we redesign the shop or procedures to make them safer and more efficient?”
    - “Why do accidents or mistakes still happen even when people know the rules and procedures?”
- Ask students to analyze real or historical incidents (shop accidents, structural failures, tool misuse) or complex build problems and:
    - Identify multiple causes.
    - Separate human error from system/design issues.
    - Propose changes to prevent or reduce risk in the future.
- Challenge them to connect safety, measurement, tool choice, and joinery to real-world quality

standards (e.g., building codes, tolerances, durability).

Leadership & Responsibility

- Assign lead roles in group activities across units, such as:
    - Team leader during safety scavenger hunts or measurement relays.
    - "Safety coach" who checks that posters, tool ID booklets, or procedures use accurate rules and vocabulary.
    - Demonstration helper who models proper PPE use, measurement technique, or basic tool setup at the start of class.
- Have them design and promote a class safety or quality campaign, such as:
    - Safety slogan and visual posters.
    - Short announcements or mini-lessons for peers.
    - A class goal (e.g., number of days with 100% PPE use or accurate cleanup).

Advanced Products & Choice

- For written and performance tasks, invite more complex products
- Offer choice in product for demonstrating understanding throughout the semester, such as: Detailed written reflection or technical explanation. Mini safety or training slideshow. New-student safety guide or measurement/checklist tool. Short video or diagram-based tutorial (if allowed by your setting).
- Encourage ongoing independent observation and improvement

Computer Sci Design Thinking

CS.9-12.8.1.12.AP.5	Decompose problems into smaller components through systematic analysis, using constructs such as procedures, modules, and/or objects.
CS.9-12.8.1.12.AP.8	Evaluate and refine computational artifacts to make them more usable and accessible.
CS.9-12.8.1.12.DA.1	Create interactive data visualizations using software tools to help others better understand real world phenomena, including climate change.
CS.9-12.8.1.12.DA.5	Create data visualizations from large data sets to summarize, communicate, and support different interpretations of real-world phenomena.
CS.9-12.8.1.12.DA.6	Create and refine computational models to better represent the relationships among different elements of data collected from a phenomenon or process.

Career Readiness, Life Literacies and Key Skills Practice

9.2.12.CAP.1	Analyze unemployment rates for workers with different levels of education and how the economic, social, and political conditions of a time period are affected by a recession.
9.2.12.CAP.2	Develop college and career readiness skills by participating in opportunities such as structured learning experiences, apprenticeships, and dual enrollment programs.
9.2.12.CAP.3	Investigate how continuing education contributes to one's career and personal growth.
9.2.12.CAP.4	Evaluate different careers and develop various plans (e.g., costs of public, private, training

	schools) and timetables for achieving them, including educational/training requirements, costs, loans, and debt repayment.
9.2.12.CAP.5	Assess and modify a personal plan to support current interests and post-secondary plans.
9.2.12.CAP.6	Identify transferable skills in career choices and design alternative career plans based on those skills.
9.2.12.CAP.21	Explain low-cost and low-risk ways to start a business.
9.2.12.CAP.22	Compare risk and reward potential and use the comparison to decide whether starting a business is feasible.

Unit 3: Hand Tools and Basic Techniques

Content Area: **Science**
Course(s): **Wood 1 (s)**
Time Period: **1st Marking Period**
Length: **2 weeks**
Status: **Not Published**

Summary of the Unit

In Unit 3, students develop foundational skills for safely and effectively using common woodworking hand tools. Building on earlier work in safety and measurement, they learn how to cut, shape, and smooth wood using hand saws, chisels, mallets, block planes, and sanding tools, and how to drill accurate holes with hand and basic power drills. Through focused mini-lessons, guided practice, and a small box-joint project, students connect tool safety, proper technique, and careful layout to the quality of their work. Writing tasks such as tool users' manuals and short reflections help students articulate what each tool is for, key safety rules, effective techniques, and how their skills and confidence with hand tools grow over time.

Enduring Understandings

- Safe, consistent hand-tool techniques are essential for accurate, high-quality woodworking and help prevent injuries.
- Each hand tool has a specific purpose, strengths, and limitations; choosing and using the right tool the right way leads to better results.
- Careful control of cutting, shaping, sanding, and drilling by hand teaches students how wood behaves and how small adjustments can greatly improve fit and surface quality.
- Reflecting on process—through tool manuals, technique reflections, and before/after comparisons—helps students build long-term skills and confidence with tools.
- Strong hand-tool fundamentals prepare students for safer, more effective use of power tools and more complex joinery in later units.

Essential Questions

- How do safe, proper techniques with hand tools affect the quality, accuracy, and safety of a woodworking project?
- In what ways do different hand tools (saws, chisels, planes, sanding tools, drills) work together to cut, shape, and smooth wood?
- How does practicing with hand tools change the way I think about craftsmanship, patience, and problem-solving in the shop?
- Why is it important to be able to describe and explain tool safety and techniques, not just perform them?

Unit Summative Assessment and Alternate Assessment Options

- Tool User's Manual Page
- Hand Tool Skills Board Check (Performance Task)
- Sanding Performance Tasks (combined as a major benchmark)

- Drilling Practice Board & Pilot Hole Block (Performance Tasks)
- Before/After Skill Check-In (Reflection Benchmark)
- Basic Wood Joint w/ Box Joint Project (if you are counting it as part of Unit 3) A multi-day project where students:
    - read a simple box-joint project plan and cut list
    - measure, mark, and cut parts to size
    - lay out and cut box-joint fingers
    - glue, clamp, and square the assembly
    - reflect on fit, squareness, and what they would change next time

Resources

Hand tools and equipment

- Class set of hand saws (e.g., crosscut or backsaws)
- Chisels and mallets
- Block planes
- Sandpaper in multiple grits (e.g., 80, 120, 180, 220+)
- Sanding blocks and sanding sponges
- Hand drills/eggbeater or braces (if available)
- Cordless drill/drivers for introductory drilling
- Clamps and vises for securing workpieces
- Small squares, rulers/tapes, marking gauges, and pencils

Demo and practice materials

- Scrap boards for sawing, chiseling, planing, sanding, and drilling practice
- Pre-marked practice boards (cut-to-line boards, chisel recess boxes, planing edges, sanding comparison strips, drilling patterns)
- “Hand Tool Skills Board” blanks for combined practice (saw, chisel, plane)

Instructional supports
Teacher-made slides/notes for:

- Hand tool parts and functions (saw, chisel, mallet, block plane, sanding tools, drills)

- Key safety rules and common mistakes for each tool
- Examples of good vs. poor cuts, surfaces, and drilled holes
- Visual diagrams or posters near tool areas (proper grips, stance, direction of cut/planing, sanding with the grain)
- Word wall / vocabulary list for hand-tool terms and safety language

Writing and reflection materials

- “Tool User’s Manual” page template or guidelines
- Technique reflection prompts/sheets
- Before/After Skill Check-In prompt sheet or template

Optional media
Short videos demonstrating:

- Safe hand saw use and cutting to a line
- Basic chisel and mallet techniques
- Block plane setup and planing with the grain
- Hand sanding and grit progression
- Safe basic drilling with a cordless drill

- https://youtu.be/h_LsE0alntY?si=7JkZ1M-4VNV1opUW
- https://youtu.be/FSFR6WbWSAo?si=7q1tXjykyacqWq8z
- https://youtu.be/KiE4Pk_gu50?si=i7IFerreBvGw6LH9

Unit Plan

Topic/Selection Timeframe	General Objective	Instructional Activities	Assessments
Unit 3: Hand Tools and Basic Techniques 2 weeks	SWBAT safely use common hand tools (hand saws, chisels, mallets, block planes, sanding tools) to cut, shape, and smooth wood, and evaluate the accuracy and quality of their hand-tool work. SWBAT plan and build a small woodworking project from start to finish, including reading the plan, measuring and cutting parts, assembling, sanding, and basic surface preparation, while meeting agreed safety and quality	Tool User's Manual Page Each student picks one hand tool (chisel, hand saw, block plane, etc.) and writes a one-page "user manual" including: • what the tool is for • 3 safety rules • 3 tips for best results • 1 common mistake and how to avoid it. Technique Reflection After practicing a skill (e.g., measuring and marking, cutting to a line, sanding): Prompt: "Explain the technique you learned today. What was hardest at first? What did you do to improve? What will you focus on next time to get cleaner, more accurate work?" Before/After Skill Check-In Students write two short paragraphs: • Before this unit, I thought hand tools were… • Now I understand that hand tools are… Include one specific example from their own work.	Tool User's Manual Page (Performance + Written Task) Technique Reflection (Written Check-In) Before/After Skill Check-In (Reflection Benchmark)

	expectations. SWBAT plan and build a small woodworking project from start to finish, including reading the plan, measuring and cutting parts, assembling, sanding, and basic surface preparation, while meeting agreed safety and quality expectations.		
Using hand saws, chisels, mallets, and block planes 2-3 days	SWBAT identify the parts of a hand saw and demonstrate a safe grip, stance, and cutting motion while cutting to a marked line.	Mini-Lesson / Demo: Hand Saws Label parts: handle, teeth, spine/back (if backsaw), toe, heel. • Model: stance, clamping the work, starting the kerf, full smooth strokes. • Safety focus: secure work, keep hands clear of blade, no cutting unsupported stock. • Guided Practice: Cut to the Line • Students clamp a small board. • Teacher has pre-marked (or students mark) straight cut lines.	Hand Tool Skills Board Check (Performance Task)

	SWBAT use a chisel and mallet to remove wood in a controlled way along a marked line or within a waste area, following basic safety rules. SWBAT use a block plane to smooth or chamfer an edge with the grain, producing a cleaner surface without significant tear-out. SWBAT explain and apply at least three key safety rules for hand saws, chisels, mallets, and block planes during guided practice. SWBAT evaluate their own	• Students practice: Starting a cut on the waste side of the line. Following the line as closely as possible. • Quick Reflection • Prompt: "What was hardest about cutting to the line today? What will you try differently next time?" (oral share or quick-write). Mini-Lesson / Demo: Chisels & Mallets • Parts: handle, ferrule, blade, bevel, cutting edge. • Show how to hold chisel for: Paring (by hand, light pressure)- Chopping (with mallet, controlled taps) Safety: always push away from body/hand, secure work, sharp tools handled carefully, no prying. • Guided Practice: Chisel Control • Students get a small block with a shallow waste area marked. • Tasks: Pare down to a line in thin shavings. Use light mallet taps to remove waste in stages. Focus on flat bottom and staying inside the waste area. Mini-Lesson / Demo: Block Plane • Parts: body, iron/blade, mouth, knob/lever cap, adjustment. • Demonstrate: Checking grain direction. Planing with the grain vs. against (show tear-out). Light, overlapping passes along an edge. • Practice: Smooth the Edge- Students plane an edge of a short board: Mark the grain direction arrow first. Aim for a smooth, consistent surface. Optional: introduce a small chamfer along the edge. Hand Tool Skills Board Task • Each student receives a "Hand Tool Skills Board" with simple instructions, such as: Saw off a marked strip on one end of the board. Use a chisel and mallet to remove a shallow recess within a marked box. Use the block plane to smooth one	Technique & Safety Exit Ticket (Written) Quick Oral Check or Station Demo Mini "Tool User's Card"

	test piece for straightness, smoothness, and accuracy and identify one specific way to improve their technique.	edge and add a small chamfer. Self-Check & Peer Check • Students use a ruler/square and fingertips to check: Saw cut straightness and closeness to the line. Chisel recess depth/flatness and cleanliness of edges. Smoothness of planed/chamfered edge. Quick peer feedback: "One thing you did well / one thing to improve."	(Optional Written Assessment)
Sanding Techniques 2-3 days	SWBAT identify and describe the function of common sanding tools and materials (sandpaper grits, sanding blocks, sanding sponges, sanding with the grain vs. against). SWBAT select appropriate sandpaper grits for different tasks (initial smoothing, removing marks, between-	Mini-Lesson: Sandpaper & Grits Show examples of common grits (e.g., 60/80, 120, 180, 220+). Explain: • What the numbers mean (coarser vs. finer). • When to use coarse vs. medium vs. fine. • Why "skipping" too many grits can leave deep scratches. Introduce tools: loose sheets, sanding blocks, sanding sponges, sanding with a backer block vs. just fingers. Safety reminders: dust masks/respirators, goggles, dust collection or cleanup, avoiding breathing dust directly. Guided Demo: Basic Hand-Sanding Show: • Sanding with the grain vs. across/against the grain (show scratch patterns). • Using a sanding block for flat surfaces and a sponge for curves/edges. • Light, even pressure instead of pressing hard in one spot. Student Practice: Grit Comparison Strips Give each student 3–4 small wood strips or clearly marked	Grit Comparison Strip / Board (Performance Task)

	coat sanding, final finish) and justify their choices. SWBAT demonstrate proper hand-sanding technique by sanding with the grain and using even pressure to produce a noticeably smoother surface without deep scratches. SWBAT compare the surface quality of boards sanded with different grits and/or directions and explain how grit choice and	zones on one board. Task: • Label each zone: 80 grit, 120 grit, 180 grit, 220 grit (or similar sequence). • Sand each zone with only its assigned grit, always with the grain. • After sanding, students: Feel each zone and write 1–2 words to describe (rough, smoother, very smooth, etc.). Circle which grit they would choose for "final sanding" on a project. Mini-Lesson: Fixing Common Surface Problems Show example boards with: • Pencil marks / layout lines • Saw marks • Small dents or uneven spots • Cross-grain scratches Explain: • Start with a coarser grit just enough to remove the defect, then move up to finer grits. • Why sanding across the grain leaves visible scratches under finish. Guided Practice: "Before & After" Sanding Board Each student gets a small board with pre-drawn pencil marks and a few saw marks. On the back or a taped label, students plan: • Step 1: Coarse grit (e.g., 80–100) to remove marks. • Step 2: Medium grit (e.g., 120–150). • Step 3: Fine grit (e.g., 180–220+). Students: • Sand half the board following their grit sequence.	"Before & After"

	technique affect the final appearance and feel. SWBAT explain at least three key safety and housekeeping rules related to sanding (dust control, PPE, workspace cleanup) and apply them during practice.	• Leave the other half unsanded (for comparison). Comparison & Reflection (5–10 min) • Students compare rough vs. sanded halves by sight and touch. • Optional quick-write: "Explain how your sanding changed the look and feel of the board. What would you change about your process next time?" Mini-Lesson: Edges, Curves, and Between-Coat Sanding Show how to: • Slightly break/sharpen edges (small ease vs. rounding too much). • Use sanding sponges or wrapped paper for curves. • Lightly sand between coats of finish (if fits your course) with very fine grit (220–320) to knock down raised grain or dust nibs. Practice Stations Stations could include: • Edge station: Lightly easing sharp edges. • Curve station: Sanding inside/outside curves on scrap. • Between-coat station (or simulated): Very light sanding with high grit on a pre-finished sample. Group Debrief / Exit Ticket Prompt options: • "Which sanding job (flat surface, edge, or curve) do you find most challenging, and why?" • "Name one sanding mistake that could ruin the look of a finished project." • https://youtu.be/mKairfMzc6Q?si=a4XOO7JbVU9t9eMR	Sanding Board Check (Performance Task) Sanding Technique & Safety Exit Ticket (Written)

			Quick Oral or Station Check (Optional)
Drilling with hand and power tools 2-3 days	SWBAT identify common drilling tools and parts (hand drill/eggbeater or brace, cordless drill/driver, drill press, drill bits, countersink, depth stop) and describe their basic function in woodworking. SWBAT explain and apply key drilling safety rules for both hand and power drilling tools, including PPE, securing work, and safe body/hand position.	Mini-Lesson: Drilling Tools & Bits Show and briefly compare: • Hand drill/brace (if available) • Cordless drill/driver • Drill press (as preview; full procedures come in Unit 4) Identify key parts: • Chuck, trigger, speed/torque settings, forward/reverse, handle, depth stop (if present). Drill bits: • Twist bits, brad-point bits (and optionally Forstner/spade bits if you use them). • When to use pilot holes vs. clearance holes. Safety Emphasis • Eye protection and hearing protection (as needed). • Clamp and support workpieces (no loose pieces in hand). • Keep hands away from the bit path; never wear loose clothing/jewelry. • Trigger discipline: finger off trigger until ready to drill. Demo: Basic Straight Hole Mark a center point with an awl or pencil cross. Show: • Aligning the bit perpendicular to the surface. • Starting slowly to avoid bit wandering.	Drilling Practice Board (Performance Task) Pilot Hole & Screw Block (Performance Task)

	SWBAT select appropriate drill bits and speeds/settings for different tasks (pilot holes, clearance holes, deep holes, and surface holes for hardware) and justify their choices. SWBAT drill straight, clean holes to a marked location and depth using a hand drill and/or power drill, with the	• Moderate pressure; let the bit cut. • Backing out to clear chips. • Drilling into a backer board to reduce tear-out. Student Practice: Drill to the Dot • Each student gets a test board with several marked dots in a grid. • Task: Clamp board to bench. Drill a series of through-holes on the dots using a cordless drill. Focus on: staying on the mark, drilling straight, and reducing tear-out with a backer. • Teacher circulates to correct grip, stance, bit alignment, and safety. Quick Exit Ticket • Prompt: "Name one safety rule for drilling and one tip that helped you keep the bit on the mark." Mini-Lesson: Depth, Pilot Holes, and Tear-Out Show examples of: • A too-deep hole, too-shallow hole, and correct-depth hole. • Screws driven with and without pilot holes (splitting vs. not splitting wood). Demonstrate depth control methods: • Tape flag on bit. • Built-in depth stop (on drill press/hand drill if available). Guided Practice: Pilot Holes for Screws Each student gets a small block and several screws. Task: • Mark screw locations. • Choose an appropriate pilot bit (slightly smaller than the screw's root diameter). • Drill pilot holes to a taped depth.	Drilling Safety & Technique Exit Ticket (Written)

	work properly clamped and minimal tear-out. SWBAT evaluate their drilled test piece (location, straightness, tear-out, depth) and identify at least one specific improvement for future drilling.	• (Optional) Drive screws to see how the pilot hole helps. Emphasize clamping, straight drilling, and stopping at the depth mark. Optional Demo/Intro: Drill Press Basics If appropriate at this stage: • Show locating the bit over the mark. • Setting table height and clamping work. • Using a mechanical depth stop. • Emphasize that formal drill press procedures will be revisited in Unit 4. Student Practice: Depth & Location Board Small board with: • 2–3 marked through-holes. • 2–3 marked stopped holes (e.g., ½" deep). Students drill: • Through-holes with a backer. • Stopped holes to a taped depth (check with a ruler or depth gauge). Reflection (5 min) • Pair share or quick-write: “What is one mistake you made drilling today, and what will you change next time?” Accuracy & Layout Challenge Give students a “Drilling Practice Pattern” sheet or board with: • A straight line of equally spaced marks. • A simple square/rectangular pattern of marks. Task: • Clamp board. • Drill all the marked holes as straight and centered	Quick Oral/Station Check (Optional)

		as possible. • Use a square or visual check to see if holes line up. Mini-Intro: Simple Drill Guide/Jig Show how a right-angle block or simple shop-made jig can help: • Keep the drill perpendicular. • Position the drill in repeatable locations. Self & Peer Check (5–10 min) Students examine each other's boards and give feedback: Are the holes on the marks? Are they straight (check from the side)? Is there major tear-out on the back?	
Basic Wood Joint w/ Box Joint Project 4-6 days	SWBAT describe the purpose and basic structure of a box joint and compare it to a simple butt joint in terms of strength and surface area for glue. SWBAT read a simple box joint project plan (dimensions, part labels, and joint layout) and create or follow a basic cut list for the	Mini-Lesson: Basic Wood Joints Overview Briefly review/introduce: butt joint, lap joint (if covered), and box joint (finger joint). Show physical examples or images: • Where box joints are used (drawers, small boxes, cases). • Why box joints are stronger than butt joints (more glue surface, interlocking fingers). Plan Walkthrough: Box Joint Project Present the Box Joint Project plan: • Name each part (sides, ends, bottom, lid if included). • Review dimensions; check that students can read thickness × width × length. As a class, create or review a simple cut list for the project. Guided Layout Practice On paper or scrap: • Students sketch one corner of a box and mark	Box Joint Project Build (Performance Task) Joint Layout & Plan Check (Process/Planning Assessment) Box Joint Reflection (Written)

	parts. SWBAT accurately measure, mark, and cut parts for a small box joint project within an agreed tolerance (e.g., ±1/16"), using layout tools and saws. SWBAT lay out and cut evenly spaced fingers for a box joint using a jig or guided method, and test-fit the joint, making minor adjustments as needed. SWBAT glue, clamp, and square up a basic box joint assembly, checking for fit and correcting	where the fingers will go. • Introduce the idea of finger width spacing (e.g., all fingers ½" wide or sized to match stock thickness, depending on your setup). Review & Safety Reminder Review measurement/layout accuracy and relevant tool safety (saws, layout tools, any jigs). Cutting Project Parts Students: • Measure and mark length/width of each box piece on stock. • Cut pieces using the appropriate tools (hand saw, miter saw, table saw—whatever fits your course level and safety progression). • Lightly label each part (Side A, Side B, End A, End B, Bottom, etc.). Quick Fit Check Students dry-stack pieces (no joints yet) to ensure sizes are close and parts match the plan. Demo: Box Joint Layout & Jig Use Show your chosen method (hand layout, shop-made jig, or commercial jig): • Marking the first set of fingers on one board. • Using that board or a jig/indexing pin to mark/cut the mating board so fingers interlock. • Emphasize consistent spacing, staying on the waste side of the line, and test-fitting often. Safety focus: tool used for cutting the joint (hand saw, router, table saw with jig, etc.). Student Work: First Joint Pair (2 Students pick one corner of their box to start. Steps: • Lay out finger pattern on two mating pieces.	Quick Oral / Checkpoint (Optional)

	small gaps or misalignments where possible. SWBAT evaluate their finished joint or box for fit, squareness, and surface quality, and explain at least one thing they did well and one thing they would change next time	• Cut out the fingers/waste using the approved method. • Carefully test-fit; trim/tune with chisel or file if needed. Reflection / Check-In • Prompt: "What was hardest about getting the first joint to fit? What small trick or habit helped?" Work Session: Remaining Corners Students repeat the layout and cutting process for the remaining corners. Encourage them to: • Mark mating pairs clearly. • Test-fit each corner before moving on. Dry Fit and Squareness Check Students assemble the box without glue: • Check each corner for gaps. • Use a square to see how close to 90° they are. • Note where small adjustments (paring, light sanding) are needed. Mini-Lesson: Gluing and Clamping a Box Joint Show: • Light, even glue in each finger and socket (avoid huge squeeze-out). • Using clamps and cauls (if used) to pull joints tight. • Checking diagonals or using a square to keep the box from going out of square. • Safety: glue use, clamp handling, keeping fingers clear when tightening. Student Glue-Up Students glue and clamp their boxes.	

		Teacher checks each box for: • Joints fully seated. • Reasonable squareness. • Wipe-off of excess glue from visible surfaces. Light Surface Prep After glue cures (possibly next day): • Students scrape/sand off glue squeeze-out. • Lightly sand exterior surfaces and break sharp edges. Project Reflection Short written reflection or guided questions: • "Where is your best-fitting corner and why?" • "What would you do differently next time when laying out or cutting your joints?" • "How does this joint compare to a simple butt joint in strength and appearance?"	

Standards for Course Content Area and Cross Content Standards Addressed

9.3.12.AC.1	Use vocabulary, symbols and formulas common to architecture and construction.
9.3.12.AC.2	Use architecture and construction skills to create and manage a project.
9.3.12.AC.3	Comply with regulations and applicable codes to establish and manage a legal and safe workplace.
9.3.12.AC.4	Evaluate the nature and scope of the Architecture & Construction Career Cluster and the role of architecture and construction in society and the economy.
9.3.12.AC.5	Describe the roles, responsibilities, and relationships found in the architecture and construction trades and professions, including labor/management relationships.
9.3.12.AC.6	Read, interpret and use technical drawings, documents and specifications to plan a project.
9.3.12.AC.7	Describe career opportunities and means to achieve those opportunities in each of the Architecture & Construction Career Pathways.
9.3.12.AC-CST.1	Describe contractual relationships between all parties involved in the building process.
9.3.12.AC-CST.2	Describe the approval procedures required for successful completion of a construction project.
9.3.12.AC-CST.3	Implement testing and inspection procedures to ensure successful completion of a

	construction project.
9.3.12.AC-CST.4	Apply scheduling practices to ensure the successful completion of a construction project.
9.3.12.AC-CST.5	Apply practices and procedures required to maintain jobsite safety.
9.3.12.AC-CST.6	Manage relationships with internal and external parties to successfully complete construction projects.
9.3.12.AC-CST.7	Compare and contrast the building systems and components required for a construction project.
9.3.12.AC-CST.8	Demonstrate the construction crafts required for each phase of a construction project.
9.3.12.AC-CST.9	Safely use and maintain appropriate tools, machinery, equipment and resources to accomplish construction project goals.
9.3.12.AC-DES.1	Justify design solutions through the use of research documentation and analysis of data.
9.3.12.AC-DES.2	Use effective communication skills and strategies (listening, speaking, reading, writing and graphic communications) to work with clients and colleagues.
9.3.12.AC-DES.3	Describe the requirements of the integral systems that impact the design of buildings.
9.3.12.AC-DES.4	Apply building codes, laws and rules in the project design.
9.3.12.AC-DES.5	Identify the diversity of needs, values and social patterns in project design, including accessibility standards.
9.3.12.AC-DES.6	Apply the techniques and skills of modern drafting, design, engineering and construction to projects.

Suggested Modifications for Students with Disabilities, 504 eligible, Multilingual Learners, At Risk Students and Gifted Students

Students with Disabilities (including students with 504 plans) – Wood 1 (All Units)

Content & Directions

- Provide simplified, step-by-step directions for key procedures and safety rules, using pictures/icons whenever possible.
- Use visuals for all major tools, machines, and safety equipment (photo + label: goggles, hearing protection, dust mask, push block, fire extinguisher, first aid kit, etc.).
- Highlight or bold key safety and process words (danger, must, never, always, PPE, stop, off, on, measure, mark, cut, clamp).
- Break longer texts (safety contracts, reflections, project explanations) into short chunks with guiding questions or prompts.
- Offer sentence starters and writing frames for written work across units
- When introducing new tools or skills, provide clear, numbered steps and keep language concrete.

Process & Participation

- Allow extra time for:

    - Safety walkthroughs and scavenger hunts.
    - “What’s Wrong With This Picture?” activities.
    - Safety quizzes and written reflections.
    - Hands-on practice with measurement, layout, hand tools, and power tools.
- Let students work with a partner or small group during:
    - Safety scavenger hunts.
    - Matching games (PPE to hazard, tools to function).
    - Poster creation, tool ID booklets, and simple planning activities.
- Provide checklists for recurring tasks, such as:
    - Before class: put on goggles, tie hair back, no loose jewelry, secure loose clothing, clear workspace.
    - Before using a tool: get teacher permission, put on PPE, check tool condition, clear area.
    - When I see something unsafe: 1) Stop, 2) Move away, 3) Tell the teacher.
- Frequently model and practice safe behavior and tool procedures, then have students repeat, explain, or demonstrate the steps back.
- Offer guided notes, graphic organizers, and partially completed diagrams for complex ideas (e.g., project plans, cut lists, grain direction).

Environment & Supports

- Seat students where they can clearly see demos, visuals, and the board, and easily access safety equipment.
- Use consistent color coding throughout the shop and on diagrams:
    - Red = danger zones / do not cross.
    - Green = exits / first aid.
    - Blue = PPE stations / eye-wash.
- Provide frequent breaks or movement opportunities (e.g., passing out materials, helping with the safety walkthrough) if attention and regulation are a challenge.
- Implement all IEP and 504 accommodations, which may include:
    - Read-aloud or clarified directions for quizzes and written tasks.
    - Reduced number of items or shortened assignments.

- Repeated directions, chunked tasks, and frequent check-ins.
- Alternative formats for demonstrating understanding (oral response, checklist, labeled diagram, guided template instead of open-ended paragraph).

Multilingual Learners (MLL) – Wood 1 (All Units)

Vocabulary & Language Support

- Pre-teach key course vocabulary with pictures and simple definitions for each unit (e.g., safety, rule, accident, emergency, hazard, PPE, goggles, push block, tape measure, grain, plan, cut list, joint, clamp).
- Maintain a Wood 1 word wall with images, labels, and short, student-friendly definitions.
- Provide a picture glossary (paper or digital) that students can use across the semester.
- Allow the use of translation tools and/or bilingual dictionaries when appropriate, especially for directions and reflections.

Instructional Support

- Use short, clear sentences when explaining rules and procedures, and model while you talk (show, point, demonstrate).
- Pair Multilingual Learners with a supportive peer buddy for:
  - Safety walkthroughs and scavenger hunts.
  - "What's Wrong With This Picture?" activities.
  - Matching games, safety posters, tool ID booklets.
  - Measurement, layout, and basic joinery practice.
- Check comprehension with actions and demonstrations, not only verbal questions, for example:
  - "Show me how to wear goggles correctly."
  - "Point to the fire extinguisher/exit/first aid kit."
  - "Show me where you would stand to stay safe."
  - "Show me how you would measure 6 ½ inches."
- Provide visual supports for abstract concepts:
  - Diagrams of measurement marks, plans, cut lists, and grain direction.
  - Step-by-step posters near key tools.
- Allow alternative ways to respond (drawing, labeling, word banks, sentence frames, oral explanation)

especially early in the semester.

Gifted & Advanced Students – Wood 1 (All Units)

Depth and Complexity

- Add extension questions during discussions and reflections, for example:
    - "Which shop rule or safety practice do you think is most important and why?"
    - "How could we redesign the shop or procedures to make them safer and more efficient?"
    - "Why do accidents or mistakes still happen even when people know the rules and procedures?"
- Ask students to analyze real or historical incidents (shop accidents, structural failures, tool misuse) or complex build problems and:
    - Identify multiple causes.
    - Separate human error from system/design issues.
    - Propose changes to prevent or reduce risk in the future.
- Challenge them to connect safety, measurement, tool choice, and joinery to real-world quality standards (e.g., building codes, tolerances, durability).

Leadership & Responsibility

- Assign lead roles in group activities across units, such as:
    - Team leader during safety scavenger hunts or measurement relays.
    - "Safety coach" who checks that posters, tool ID booklets, or procedures use accurate rules and vocabulary.
    - Demonstration helper who models proper PPE use, measurement technique, or basic tool setup at the start of class.
- Have them design and promote a class safety or quality campaign, such as:
    - Safety slogan and visual posters.
    - Short announcements or mini-lessons for peers.
    - A class goal (e.g., number of days with 100% PPE use or accurate cleanup).

Advanced Products & Choice

- For written and performance tasks, invite more complex products
- Offer choice in product for demonstrating understanding throughout the semester, such as: Detailed written reflection or technical explanation. Mini safety or training slideshow. New-student safety guide or measurement/checklist tool. Short video or diagram-based tutorial (if allowed by your setting).

- Encourage ongoing independent observation and improvement

Computer Sci Design Thinking

CS.9-12.8.1.12.AP.1	Design algorithms to solve computational problems using a combination of original and existing algorithms.
CS.9-12.8.1.12.AP.2	Create generalized computational solutions using collections instead of repeatedly using simple variables.
CS.9-12.8.1.12.AP.5	Decompose problems into smaller components through systematic analysis, using constructs such as procedures, modules, and/or objects.
CS.9-12.8.1.12.AP.7	Collaboratively design and develop programs and artifacts for broad audiences by incorporating feedback from users.
CS.9-12.8.1.12.CS.2	Model interactions between application software, system software, and hardware.
CS.9-12.8.1.12.DA.1	Create interactive data visualizations using software tools to help others better understand real world phenomena, including climate change.
CS.9-12.8.1.12.DA.5	Create data visualizations from large data sets to summarize, communicate, and support different interpretations of real-world phenomena.
CS.9-12.8.1.12.DA.6	Create and refine computational models to better represent the relationships among different elements of data collected from a phenomenon or process.
	Complex programs are designed as systems of interacting modules, each with a specific role, coordinating for a common overall purpose. Modules allow for better management of complex tasks.
	Complex programs are developed, tested, and analyzed by teams drawing on the members' diverse strengths using a variety of resources, libraries, and tools.

Career Readiness, Life Literacies and Key Skills Practice

9.2.12.CAP.1	Analyze unemployment rates for workers with different levels of education and how the economic, social, and political conditions of a time period are affected by a recession.
9.2.12.CAP.2	Develop college and career readiness skills by participating in opportunities such as structured learning experiences, apprenticeships, and dual enrollment programs.
9.2.12.CAP.4	Evaluate different careers and develop various plans (e.g., costs of public, private, training schools) and timetables for achieving them, including educational/training requirements, costs, loans, and debt repayment.
9.2.12.CAP.5	Assess and modify a personal plan to support current interests and post-secondary plans.
9.2.12.CAP.6	Identify transferable skills in career choices and design alternative career plans based on those skills.
9.2.12.CAP.7	Use online resources to examine licensing, certification, and credentialing requirements at the local, state, and national levels to maintain compliance with industry requirements in areas of career interest.
9.2.12.CAP.8	Determine job entrance criteria (e.g., education credentials, math/writing/reading comprehension tests, drug tests) used by employers in various industry sectors.
9.2.12.CAP.9	Locate information on working papers, what is required to obtain them, and who must sign them.
9.2.12.CAP.10	Identify strategies for reducing overall costs of postsecondary education (e.g., tuition assistance, loans, grants, scholarships, and student loans).
9.2.12.CAP.12	Explain how compulsory government programs (e.g., Social Security, Medicare) provide insurance against some loss of income and benefits to eligible recipients.

9.2.12.CAP.13	Analyze how the economic, social, and political conditions of a time period can affect the labor market.
9.2.12.CAP.15	Demonstrate how exemptions, deductions, and deferred income (e.g., retirement or medical) can reduce taxable income.
9.2.12.CAP.21	Explain low-cost and low-risk ways to start a business.

Unit 4: Power Tool Introduction

Content Area: **Science**
Course(s): **Wood 1 (s)**
Time Period: **2nd Marking Period**
Length: **3-4 Weeks**
Status: **Not Published**

Summary of the Unit

Students are introduced to key woodworking power tools (band saw, scroll saw, drill press, sanders, and router). They learn parts, functions, and safety procedures, then demonstrate safe use through written procedures, visual safety products, hands-on machine tasks, and written reflections on confidence and safety habits.

Enduring Understandings

- Power tools are valuable but potentially dangerous; safety rules exist to prevent serious injury.
- Clear, step-by-step procedures help ensure safe and consistent tool use.
- Confidence with power tools grows through guided practice, reflection, and following safety habits.
- Jigs and guides increase accuracy, repeatability, and safety when using routers and other tools.

Essential Questions

- How can I safely and confidently operate common woodworking power tools?
- Why are specific safety rules and PPE so important for each machine?
- How do written procedures and visual reminders (posters, captions) support safe tool use?
- In what ways can jigs and guides make power tool work safer and more accurate?
- How does my comfort level with power tools change as I learn and practice safe techniques?

Unit Summative Assessment and Alternate Assessment Options

- Power Tool Procedure Write-Up (Machine of Choice)
- Machine Skills Boards
- Power Tool Safety Poster & Caption
- Confidence / Reflection Piece (Power Tool Reflection)
- Router-Specific Tasks (within Unit 4)

Resources

Mini-lessons and demos on:

- Band saw basics (parts, guards, safe cutting to a line)
- Scroll saw basics (relief cuts, controlled feed, finger placement)

- Drill press (parts, clamping, through and stopped holes)
- Sanders (belt/disc/spindle safety and technique)
- Router and jigs (handheld/router table, feed direction, simple jigs/guides)

Student practice tasks:

- Band saw cut-to-the-line boards
- Scroll saw shapes/patterns
- Drill press pattern boards (through/stopped holes)
- Edge and shape sanding practice
- Router practice boards using a jig or guide

Quick exit tickets / reflections after mini-lessons.

Unit Plan

Topic/Selection Timeframe	General Objectives	Instructional Activities	Assessments
Unit 4: Power Tool Introduction 4-5 days	SWBAT create a clear, numbered procedure for safely operating a selected power tool, including pre-use checks, step-by-step operating instructions, and shutdown steps. SWBAT identify and highlight the three most important safety rules for their chosen SWBAT design a visual safety poster that accurately shows how a specific power tool is used and key safety practices. SWBAT write a	Procedure Write-Up For one power tool (e.g., drill press, miter saw), students write a numbered list: • pre-use checks • step-by-step operating procedure • shutdown procedure • top 3 safety rules in bold or underlined. Power Tool Safety Poster Caption After making a visual poster, they add a 1–2 paragraph caption explaining: • what the tool does • the most serious risk • a real-life example (from video, story, or imagined) of what could happen if rules	Procedure Write Up Power Tool Safety Poster

	1–2 paragraph caption that explains what the tool does, the most serious risk, and a real or realistic example of what could happen if safety rules are not followed. SWBAT reflect in writing on how their feelings about using a power tool changed over time and explain which specific practice, rule, or habit helped them feel more confident and in control.	aren't followed. Confidence Reflection Prompt: "When you first saw this power tool, how did you feel? How do you feel about it now? What specific practice, rule, or habit helped you feel more confident and in control?"	Confidence Reflection
Proper use of band saw, scroll saw, drill press, and sanders 4–5 days	SWBAT identify the major parts, controls, and safety zones of the band saw, scroll saw, drill press, and stationary/belt/disc sanders, and describe their basic function in woodworking. SWBAT explain and apply key safety rules and PPE requirements for each of these machines, including proper guard setup, safe hand and body position, and safe	Mini-Lesson / Demo: Band Saw Basics Parts and controls: table, blade, upper/lower guides, blade guard/guide post, on/off switch, tension indicator, fence (if used). Safety: • Always use safety glasses; hearing protection as needed. • Guard/guide set just above the workpiece. • Keep fingers away from the blade path; use push sticks for small pieces. • No backing out of curves with the blade	Power Tool Procedure Write-Up (Machine of Choice) Machine Skills Board(s) – Band Saw / Drill Press / Sanders

	start/stop procedures. SWBAT perform basic operations on each tool SWBAT set up and complete simple "machine task boards" for at least two of these tools, demonstrating safe operation, control of the cut/sanding, and basic accuracy. SWBAT evaluate their own and peers' machine work (cut quality, accuracy to line/mark, surface smoothness, safety behavior) and identify at least one specific improvement for future machine use.	engaged (unless specifically taught a safe method). • Stand balanced to one side of the blade line, not directly behind. Teacher Demo: Basic Cuts • Straight cut to a line on a marked board. • Gentle curve cut following a marked line. • Show stopping the machine and waiting for full stop before clearing scraps. Student Practice: Band Saw Cut-to-the-Line Board Each student gets a small board with marked straight lines and a few simple curves. Task: • Adjust guard to proper height. • Make straight and curved cuts to the lines. • Focus on smooth feed and staying just next to the line (not crossing into the "keep" area). • Teacher circulates, watching hand position, guard setting, and body stance. Quick Debrief / Exit • Prompt: "What is one safety rule you must remember on the band saw?" or "What helped	

		you stay closer to the line?” Mini-Lesson / Demo: Scroll Saw Basics Parts: table, blade, hold-down, tension knob, speed control, on/off. Safety & technique: • Light downward pressure with hold-down. • Keep fingers to the sides, not in line with blade. • Slow, controlled feed; let the blade cut. • Use relief cuts for tight corners and sharp turns. Student Practice: Scroll Saw Shapes Students get small patterns (simple shapes, initials, or curves) drawn on thin stock. Task: • Make relief cuts where needed. • Cut out the shape as cleanly as possible. • Focus: control, turning with the blade, smooth lines. Mini-Lesson / Demo: Drill Press Safety & Setup Parts: table, column, chuck, feed handles, depth stop, on/off switch.	

		Safety: • Eye protection and hearing protection. • Clamp or firmly secure work to the table (no holding small pieces by hand). • Remove chuck key before turning on. • Tie back hair, no loose clothing or jewelry. Demo: Through-Holes and Stopped Holes • Mark a center point, align with bit. • Set depth stop or use tape on bit for a stopped hole. • Use a backer board to reduce tear-out. Student Practice: Drill Press Pattern Board Board with: • Marked through-holes in a line. • Marked stopped holes (e.g., ½" deep). Students: • Clamp work. • Drill all holes, focusing on alignment, straightness, and correct depth. Mini-Lesson / Demo: Sander Safety & Technique Parts: table, belt/disc/spindle,	

		on/off switch, guard. Safety: • Always keep wood on the downward-moving side of the disc/belt. • Keep fingers clear; use jigs/blocks for very small parts. • No loose clothing/hair; keep work flat on the table. • Do not push too hard; let the abrasive do the work. Student Practice: Edge & Shape Sanding Students use pre-cut pieces (rectangles and simple curves) to: • Smooth straight edges. • Refine outside curves on the appropriate sander. • Focus: control, not rounding corners unintentionally, keeping piece flat against table.	
Intro to Routers and Jigs 1-2 weeks	SWBAT identify the main parts and basic functions of a handheld router and/or router table, and describe common uses (edge profiling, dadoes/grooves, trimming with a pattern, etc.). SWBAT explain	Mini-Lesson: What is a Router? Show a handheld router (and router table if you use one): • Parts: motor, base, collet, bit, depth adjustment, on/off, handles. • Common bits (just 2–3 examples): straight bit,	Router Procedure Write-Up (Power Tool Procedure Assignment) Router Practice

	and apply key router safety rules, including PPE, securing workpieces, correct feed direction, bit exposure, and safe start/stop procedures. SWBAT describe the purpose of simple router jigs and guides (e.g., edge guides, template/pattern jigs, straightedge fences) and explain how jigs improve accuracy, repeatability, and safety. SWBAT complete a simple routed edge or groove using a basic jig or guide, demonstrating safe setup, controlled feed, and a reasonably clean cut. SWBAT evaluate their routed test piece (smoothness, straightness, depth/position of cut) and identify at least one way a jig or technique adjustment could improve future results	round-over, flush-trim. Discuss typical uses: • Rounding over sharp edges. • Cutting shallow grooves/dadoes. • Following a template or edge guide. Safety Emphasis • PPE: safety glasses, hearing protection, dust mask as needed. • Secure work (clamps, router table fence, or non-slip mat). • Check bit is properly installed and collet tight (only teacher changes bits). • Always keep hands on handles and away from bit. • Know feed direction: Handheld router on edge: move against the bit rotation. Router table: feed from right to left along fence. • Let the bit stop completely before setting router down. Demo: Simple Edge Profile Teacher routes a round-over or small chamfer on an edge: • Sets depth. • Shows proper stance and feed direction.	Board / Jig Task (Performance Assessment) Router & Jig Safety Poster or Caption (Optional Major Product)

		• Makes multiple light passes if needed. • Compare: un-routed vs. routed edge (feel difference). Student Observation / Note Sketch Quick diagram in notebooks: • Label router parts. • Arrow for safe feed direction. • 2–3 key safety rules. Mini-Lesson: Jigs and Guides Show 1–2 simple jigs/guide setups you actually use: • Straightedge/fence clamped to the work for a straight groove. • Edge guide attached to router base. • Template/pattern with a flush-trim bit (demo only if appropriate). Explain: • How a jig keeps the router where it should go. • How jigs improve repeatability (same cut on multiple pieces). • How jigs can keep hands farther from the bit and reduce mistakes. Guided Practice: Router Jig Demo (Teacher-Led First)	

		Teacher cuts a short, straight groove using a straightedge fence/jig Student Practice: Simple Edge or Groove Task Students rotate through a closely supervised router station (small groups): • Option A: Route a round-over / small chamfer on one or two edges. • Option B: Route a short straight groove using a straightedge or fence. While waiting their turn, other students can: • Work on safety posters/procedure write-ups for other tools, or • Complete a short router safety worksheet. Teacher checks: • Correct grip, stance, and feed direction. • Secure clamping and bit not overloaded. Quick Reflection Prompt: "What felt different about using a router compared to saws/sanders? What's one safety rule you will never forget?" Mini-Application Task Give each student a small "Router Practice Board": • One edge marked for a	

		round-over or chamfer. • One line marked for a short groove using a jig. Task: • Safely clamp board. • Route the edge profile. • Use the provided jig/guide to route the groove. Self/Peer Check Students evaluate: • Is the profile even along the whole edge? • Is the groove straight and on the line? • Any burn marks, chatter, or tear-out? • Pair feedback: "One thing that looks good / one thing to improve."	

Standards for Course Content Area and Cross Content Standards Addressed

	Artists and designers experiment with forms, structures, materials, concepts, media, and art-making approaches. Artists and designers balance experimentation and safety, freedom and responsibility, while developing and creating artworks. People create and interact with objects, places and design that define, shape, enhance, and empower their lives.
9.3.12.AC.1	Use vocabulary, symbols and formulas common to architecture and construction.
9.3.12.AC.2	Use architecture and construction skills to create and manage a project.
9.3.12.AC.5	Describe the roles, responsibilities, and relationships found in the architecture and construction trades and professions, including labor/management relationships.
9.3.12.AC.6	Read, interpret and use technical drawings, documents and specifications to plan a project.
9.3.12.AC-CST	Construction
9.3.12.AC-CST.1	Describe contractual relationships between all parties involved in the building process.
9.3.12.AC-CST.2	Describe the approval procedures required for successful completion of a construction project.

9.3.12.AC-CST.3	Implement testing and inspection procedures to ensure successful completion of a construction project.
9.3.12.AC-CST.4	Apply scheduling practices to ensure the successful completion of a construction project.
9.3.12.AC-CST.5	Apply practices and procedures required to maintain jobsite safety.
9.3.12.AC-CST.8	Demonstrate the construction crafts required for each phase of a construction project.
9.3.12.AC-CST.9	Safely use and maintain appropriate tools, machinery, equipment and resources to accomplish construction project goals.
9.3.12.AC-DES.1	Justify design solutions through the use of research documentation and analysis of data.
9.3.12.AC-DES.2	Use effective communication skills and strategies (listening, speaking, reading, writing and graphic communications) to work with clients and colleagues.
9.3.12.AC-DES.3	Describe the requirements of the integral systems that impact the design of buildings.
9.3.12.AC-DES.4	Apply building codes, laws and rules in the project design.
9.3.12.AC-DES.6	Apply the techniques and skills of modern drafting, design, engineering and construction to projects.
9.3.12.AC-MO.2	Use troubleshooting procedures when solving a maintenance problem in buildings.

Suggested Modifications for Students with Disabilities, 504 eligible, Multilingual Learners, At Risk Students and Gifted Students

Students with Disabilities (including students with 504 plans) – Wood 1 (All Units)

Content & Directions

- Provide simplified, step-by-step directions for key procedures and safety rules, using pictures/icons whenever possible.
- Use visuals for all major tools, machines, and safety equipment (photo + label: goggles, hearing protection, dust mask, push block, fire extinguisher, first aid kit, etc.).
- Highlight or bold key safety and process words (danger, must, never, always, PPE, stop, off, on, measure, mark, cut, clamp).
- Break longer texts (safety contracts, reflections, project explanations) into short chunks with guiding questions or prompts.
- Offer sentence starters and writing frames for written work across units
- When introducing new tools or skills, provide clear, numbered steps and keep language concrete.

Process & Participation

- Allow extra time for:
    - Safety walkthroughs and scavenger hunts.
    - “What’s Wrong With This Picture?” activities.
    - Safety quizzes and written reflections.
    - Hands-on practice with measurement, layout, hand tools, and power tools.

- Let students work with a partner or small group during:
    - Safety scavenger hunts.
    - Matching games (PPE to hazard, tools to function).
    - Poster creation, tool ID booklets, and simple planning activities.
- Provide checklists for recurring tasks, such as:
    - Before class: put on goggles, tie hair back, no loose jewelry, secure loose clothing, clear workspace.
    - Before using a tool: get teacher permission, put on PPE, check tool condition, clear area.
    - When I see something unsafe: 1) Stop, 2) Move away, 3) Tell the teacher.
- Frequently model and practice safe behavior and tool procedures, then have students repeat, explain, or demonstrate the steps back.
- Offer guided notes, graphic organizers, and partially completed diagrams for complex ideas (e.g., project plans, cut lists, grain direction).

Environment & Supports

- Seat students where they can clearly see demos, visuals, and the board, and easily access safety equipment.
- Use consistent color coding throughout the shop and on diagrams:
    - Red = danger zones / do not cross.
    - Green = exits / first aid.
    - Blue = PPE stations / eye-wash.
- Provide frequent breaks or movement opportunities (e.g., passing out materials, helping with the safety walkthrough) if attention and regulation are a challenge.
- Implement all IEP and 504 accommodations, which may include:
    - Read-aloud or clarified directions for quizzes and written tasks.
    - Reduced number of items or shortened assignments.
    - Repeated directions, chunked tasks, and frequent check-ins.
    - Alternative formats for demonstrating understanding (oral response, checklist, labeled diagram, guided template instead of open-ended paragraph).

Multilingual Learners (MLL) – Wood 1 (All Units)

Vocabulary & Language Support

- Pre-teach key course vocabulary with pictures and simple definitions for each unit (e.g., safety, rule, accident, emergency, hazard, PPE, goggles, push block, tape measure, grain, plan, cut list, joint, clamp).
- Maintain a Wood 1 word wall with images, labels, and short, student-friendly definitions.
- Provide a picture glossary (paper or digital) that students can use across the semester.
- Allow the use of translation tools and/or bilingual dictionaries when appropriate, especially for directions and reflections.

Instructional Support

- Use short, clear sentences when explaining rules and procedures, and model while you talk (show, point, demonstrate).
- Pair Multilingual Learners with a supportive peer buddy for:
    - Safety walkthroughs and scavenger hunts.
    - "What's Wrong With This Picture?" activities.
    - Matching games, safety posters, tool ID booklets.
    - Measurement, layout, and basic joinery practice.
- Check comprehension with actions and demonstrations, not only verbal questions, for example:
    - "Show me how to wear goggles correctly."
    - "Point to the fire extinguisher/exit/first aid kit."
    - "Show me where you would stand to stay safe."
    - "Show me how you would measure 6 ½ inches."
- Provide visual supports for abstract concepts:
    - Diagrams of measurement marks, plans, cut lists, and grain direction.
    - Step-by-step posters near key tools.
- Allow alternative ways to respond (drawing, labeling, word banks, sentence frames, oral explanation) especially early in the semester.

Gifted & Advanced Students – Wood 1 (All Units)

Depth and Complexity

- Add extension questions during discussions and reflections, for example:
    - "Which shop rule or safety practice do you think is most important and why?"
    - "How could we redesign the shop or procedures to make them safer and more efficient?"
    - "Why do accidents or mistakes still happen even when people know the rules and procedures?"
- Ask students to analyze real or historical incidents (shop accidents, structural failures, tool misuse) or complex build problems and:
    - Identify multiple causes.
    - Separate human error from system/design issues.
    - Propose changes to prevent or reduce risk in the future.
- Challenge them to connect safety, measurement, tool choice, and joinery to real-world quality standards (e.g., building codes, tolerances, durability).

Leadership & Responsibility

- Assign lead roles in group activities across units, such as:
    - Team leader during safety scavenger hunts or measurement relays.
    - "Safety coach" who checks that posters, tool ID booklets, or procedures use accurate rules and vocabulary.
    - Demonstration helper who models proper PPE use, measurement technique, or basic tool setup at the start of class.
- Have them design and promote a class safety or quality campaign, such as:
    - Safety slogan and visual posters.
    - Short announcements or mini-lessons for peers.
    - A class goal (e.g., number of days with 100% PPE use or accurate cleanup).

Advanced Products & Choice

- For written and performance tasks, invite more complex products
- Offer choice in product for demonstrating understanding throughout the semester, such as: Detailed written reflection or technical explanation. Mini safety or training slideshow. New-student safety guide or measurement/checklist tool. Short video or diagram-based tutorial (if allowed by your setting).

Computer Sci Design Thinking

CS.9-12.8.1.12.AP.5	Decompose problems into smaller components through systematic analysis, using constructs such as procedures, modules, and/or objects.
CS.9-12.8.1.12.AP.7	Collaboratively design and develop programs and artifacts for broad audiences by incorporating feedback from users.
CS.9-12.8.1.12.AP.8	Evaluate and refine computational artifacts to make them more usable and accessible.
CS.9-12.8.1.12.DA.1	Create interactive data visualizations using software tools to help others better understand real world phenomena, including climate change.
CS.9-12.8.1.12.DA.5	Create data visualizations from large data sets to summarize, communicate, and support different interpretations of real-world phenomena.
CS.9-12.8.1.12.DA.6	Create and refine computational models to better represent the relationships among different elements of data collected from a phenomenon or process.

Career Readiness, Life Literacies and Key Skills Practice

9.2.12.CAP.4	Evaluate different careers and develop various plans (e.g., costs of public, private, training schools) and timetables for achieving them, including educational/training requirements, costs, loans, and debt repayment.
9.2.12.CAP.5	Assess and modify a personal plan to support current interests and post-secondary plans.
9.2.12.CAP.6	Identify transferable skills in career choices and design alternative career plans based on those skills.
9.2.12.CAP.7	Use online resources to examine licensing, certification, and credentialing requirements at the local, state, and national levels to maintain compliance with industry requirements in areas of career interest.
9.2.12.CAP.22	Compare risk and reward potential and use the comparison to decide whether starting a business is feasible.
9.4.2.CI.1	Demonstrate openness to new ideas and perspectives (e.g., 1.1.2.CR1a, 2.1.2.EH.1, 6.1.2.CivicsCM.2).
9.4.2.CT.1	Gather information about an issue, such as climate change, and collaboratively brainstorm ways to solve the problem (e.g., K-2-ETS1-1, 6.3.2.GeoGI.2).
9.4.2.CT.2	Identify possible approaches and resources to execute a plan (e.g., 1.2.2.CR1b, 8.2.2.ED.3).
9.4.2.CT.3	Use a variety of types of thinking to solve problems (e.g., inductive, deductive).

Unit 5: Basic Joinery

Content Area: **Science**
Course(s): **Wood 1 (s)**
Time Period: **2nd Marking Period**
Length: **3-4 Weeks**
Status: **Not Published**

Summary of the Unit

In this unit, students learn the fundamental joinery skills needed to create strong, attractive wood projects. They explore different types of edge and lap joints, practice safe and effective clamping and gluing techniques, and experiment with dowels and pocket hole joinery. Students also learn how to prepare wood surfaces for finishing, apply stain to enhance the wood's appearance, and protect their work with polyurethane. By the end of the unit, students can create a small project that demonstrates accurate joinery, careful craftsmanship, and a clean, durable finish.

Enduring Understandings

- The quality of a woodworking project depends heavily on the strength and accuracy of its joints, not just its overall design.
- Different joinery methods have distinct strengths and limitations, and skilled woodworkers choose joints based on function, appearance, tools available, and time.
- Proper clamping and gluing techniques are critical to producing strong, long-lasting joints.
- Surface preparation and finishing are essential parts of craftsmanship, affecting both the durability and appearance of the final product.
- Attention to safety, measurement, and detail is a transferable skill that applies beyond the woodshop to many technical and creative fields.

Essential Questions

- How does the type of joint you choose affect the strength, appearance, and lifespan of a woodworking project?
- What makes a "good" joint, and how can you tell if a joint is likely to fail?
- How do clamping and gluing practices influence the success of a glue-up?
- Why is careful sanding and surface preparation necessary before applying stain and polyurethane?
- In what ways do different joinery methods (traditional joints, dowels, pocket holes) reflect trade-offs between time, tools, skill, and aesthetics?
- How does craftsmanship in joinery and finishing show pride, responsibility, and professionalism?

Unit Summative Assessment and Alternate Assessment Options

- Joinery Sample Board with multiple joint types and a basic finish.
- Small Project Build (e.g., frame, box, or shelf) using at least two joinery methods and full finishing process.

- Written/Oral Assessment on joinery types, glue-up and clamping, and finishing procedures.

Resources

Tools and Equipment

- Assorted hand saws, chisels, mallets
- Table saw, miter saw, or band saw (as available)
- Drill and drill press with appropriate bits
- Clamps: F-style, bar/parallel, C-clamps, pipe clamps, corner clamps
- Dowel jig and bits
- Pocket hole jig and screws (assorted lengths)
- Sandpaper in multiple grits (e.g., 80, 120, 150, 180, 220)
- Random orbit sanders or sanding blocks

Materials

- Softwood boards (e.g., pine/poplar) for practice joints
- Hardwood or project lumber (if available) for final project
- Wood glue (PVA)
- Wood stains in a few colors
- Polyurethane (brush-on or wipe-on)
- Rags, brushes, foam applicators
- Scrap boards for test joints and test finishing

Safety and Shop Supplies

- Safety glasses, hearing protection, dust masks/respirators
- Gloves (for handling, not near rotating tools)
- Drop cloths/newspaper, stir sticks, solvent/cleanup materials per your safety policy

Instructional Media (Examples)

- Short videos or animations showing types of joints and glue-ups
- Posters or anchor charts illustrating joint types, clamping patterns, and grit progression

- Teacher- or district-approved woodworking texts or online references

Teacher-Created Materials

- Joint Identification sheet
- Clamp Setup Checklist
- Finishing steps handout
- Rubrics for: joint quality, finishing quality, and final project

Unit Plan

Topic/Selection Timeframe	General Objectives	Instructional Activities	Assessments
Unit 5: Basic Joinery 3-4 weeks	SWBAT Identify and describe common edge joints and lap joints and explain when each is most appropriate. SWBAT Lay out, cut, and assemble basic edge joints (e.g., butt, rabbet, dado, tongue and groove) with acceptable accuracy and fit. SWBAT Lay out, cut, and assemble basic lap joints (e.g., half-lap, cross-lap) using hand tools and/or machines	Mini-lesson: Teacher-led presentation on types of edge joints and lap joints (with physical samples and diagrams). Safety review: Clamping safety, glue safety (PPE, ventilation, skin contact), and machine safety (if using table saw, miter saw, drill press, etc.). Live demo: • Cutting and assembling one edge joint and one lap joint. • Demonstrate correct glue application, clamping sequence, and cleanup. **Joint Identification and Sketching** • Students rotate through "joint stations" with labeled examples of edge and lap joints. • Students complete a Joint Identification Sheet: sketch each joint, label parts, and list one common use.	Joint Identification Quiz Exit tickets Skill checks Notebook checks Joinery Sample Board Small Project Build (e.g., Picture Frame, Small Box, or Shelf) Written/Oral Assessment

	safely. SWBAT Select appropriate clamps for a given project and apply correct clamping pressure and placement to ensure proper alignment and glue squeeze-out. SWBAT Demonstrate proper wood gluing techniques, including surface preparation, adhesive selection, application, open time, and cleanup. SWBAT Use dowels and pocket hole joinery to join two or more boards, following a layout plan and maintaining alignment and squareness.	**Practice: Edge Joints** Guided practice: • Students measure and mark boards for a simple edge joint (e.g., butt joint or tongue-and-groove using available tools/jigs). • Teacher circulates, checking layout, measurement, and saw setup. Build: Students cut and assemble at least one edge joint in scrap stock, then clamp and glue. **Practice: Lap Joints** • Review: Characteristics and common uses for lap joints. • Hands-on: Students cut a basic half-lap joint on practice stock using hand saw/chisel or machine (depending on your shop). Students assemble and glue/clamp the lap joint, focusing on alignment and fit. Clamping and Gluing Techniques Lab Short demo: different clamp types (bar, F-style, C-clamps, pipe clamps, corner clamps), proper spacing, and how much pressure is enough. Lab rotations: Students practice setting up: • Parallel clamp setup for panel glue-up • Corner clamping for a	

	SWBAT Describe advantages and limitations of dowels, pocket screws, and traditional joints in terms of strength, appearance, and time. SWBAT Prepare wood surfaces for finishing by sanding through appropriate grits while maintaining edges and profiles. SWBAT Apply stain and/or dye evenly to achieve a desired color, testing on scrap and adjusting technique as needed. SWBAT Apply a basic polyurethane finish (brush-on or wipe-on), including sanding between coats and	frame • Checking for square using a square or diagonal measurements • Students complete a Clamp Setup Checklist at each station. Dowels and Pocket Hole Joinery • Teacher demo: How to use a dowel jig and a pocket hole jig (or system you have) including marking, drilling, glue use (or not) with pocket screws, and screw length selection. • Paired activity: o In pairs, students create a small sample frame or "L" joint using dowels. o In a second trial, create a similar joint using pocket holes. • Reflection discussion: Compare speed, difficulty, and appearance of both methods. Finishing Basics: Sanding Mini-lesson: Grit progression (e.g., 80–120–150–180), with examples of under-sanded vs. over-sanded surfaces. Hands-on: Students sand their joint samples incrementally, recording:	

	maintaining a clean, dust-minimized environment. SWBAT Evaluate the quality of their own joints and finishes using a teacher-provided rubric and propose at least one improvement. SWBAT Demonstrate safe work habits when using clamps, adhesives, hand tools, and power tools related to joinery and finishing.	• Starting grit, ending grit • Direction of sanding relative to grain • Observations about smoothness and visible scratches **Finishing Basics: Stain and Polyurethane** • Demo: Applying stain on scrap, wiping off, avoiding lap marks, and drying time. • Demo: Applying polyurethane (brush or wipe), level strokes, avoiding drips, drying, and sanding between coats. • Student practice: Students apply stain and at least one coat of polyurethane to their best joint sample or a separate finishing board. **Critique and Reflection** • Gallery walk: Students display their joints and finished pieces. • Class uses a simple rubric/checklist to assess craftsmanship: fit, alignment, squeeze-out/cleanup, surface prep, and finish quality. Students complete a short written reflection: “What went well? What would I do differently next time?”	

Standards for Course Content Area and Cross Content Standards Addressed

9.3.12.AC.1	Use vocabulary, symbols and formulas common to architecture and construction.
9.3.12.AC.2	Use architecture and construction skills to create and manage a project.
9.3.12.AC.5	Describe the roles, responsibilities, and relationships found in the architecture and construction trades and professions, including labor/management relationships.
9.3.12.AC.6	Read, interpret and use technical drawings, documents and specifications to plan a project.
9.3.12.AC-CST.1	Describe contractual relationships between all parties involved in the building process.
9.3.12.AC-CST.2	Describe the approval procedures required for successful completion of a construction project.
9.3.12.AC-CST.3	Implement testing and inspection procedures to ensure successful completion of a construction project.
9.3.12.AC-CST.4	Apply scheduling practices to ensure the successful completion of a construction project.
9.3.12.AC-CST.5	Apply practices and procedures required to maintain jobsite safety.
9.3.12.AC-CST.6	Manage relationships with internal and external parties to successfully complete construction projects.
9.3.12.AC-CST.8	Demonstrate the construction crafts required for each phase of a construction project.
9.3.12.AC-CST.9	Safely use and maintain appropriate tools, machinery, equipment and resources to accomplish construction project goals.
9.3.12.AC-DES.1	Justify design solutions through the use of research documentation and analysis of data.
9.3.12.AC-DES.2	Use effective communication skills and strategies (listening, speaking, reading, writing and graphic communications) to work with clients and colleagues.
9.3.12.AC-DES.3	Describe the requirements of the integral systems that impact the design of buildings.
9.3.12.AC-DES.6	Apply the techniques and skills of modern drafting, design, engineering and construction to projects.
9.3.12.AC-DES.7	Employ appropriate representational media to communicate concepts and project design.
9.3.12.AC-MO.1	Recognize and employ universal construction signs and symbols to function safely in the workplace.

Suggested Modifications for Students with Disabilities, 504 eligible, Multilingual Learners, At Risk Students and Gifted Students

Students with Disabilities (including students with 504 plans) – Wood 1 (All Units)

Content & Directions

- Provide simplified, step-by-step directions for key procedures and safety rules, using pictures/icons whenever possible.
- Use visuals for all major tools, machines, and safety equipment (photo + label: goggles, hearing protection, dust mask, push block, fire extinguisher, first aid kit, etc.).
- Highlight or bold key safety and process words (danger, must, never, always, PPE, stop, off, on, measure, mark, cut, clamp).
- Break longer texts (safety contracts, reflections, project explanations) into short chunks with guiding questions or prompts.

- Offer sentence starters and writing frames for written work across units
- When introducing new tools or skills, provide clear, numbered steps and keep language concrete.

Process & Participation

- Allow extra time for:
    - Safety walkthroughs and scavenger hunts.
    - “What’s Wrong With This Picture?” activities.
    - Safety quizzes and written reflections.
    - Hands-on practice with measurement, layout, hand tools, and power tools.
- Let students work with a partner or small group during:
    - Safety scavenger hunts.
    - Matching games (PPE to hazard, tools to function).
    - Poster creation, tool ID booklets, and simple planning activities.
- Provide checklists for recurring tasks, such as:
    - Before class: put on goggles, tie hair back, no loose jewelry, secure loose clothing, clear workspace.
    - Before using a tool: get teacher permission, put on PPE, check tool condition, clear area.
    - When I see something unsafe: 1) Stop, 2) Move away, 3) Tell the teacher.
- Frequently model and practice safe behavior and tool procedures, then have students repeat, explain, or demonstrate the steps back.
- Offer guided notes, graphic organizers, and partially completed diagrams for complex ideas (e.g., project plans, cut lists, grain direction).

Environment & Supports

- Seat students where they can clearly see demos, visuals, and the board, and easily access safety equipment.
- Use consistent color coding throughout the shop and on diagrams:
    - Red = danger zones / do not cross.
    - Green = exits / first aid.
    - Blue = PPE stations / eye-wash.
- Provide frequent breaks or movement opportunities (e.g., passing out materials, helping with the safety

walkthrough) if attention and regulation are a challenge.

- Implement all IEP and 504 accommodations, which may include:
    - Read-aloud or clarified directions for quizzes and written tasks.
    - Reduced number of items or shortened assignments.
    - Repeated directions, chunked tasks, and frequent check-ins.
    - Alternative formats for demonstrating understanding (oral response, checklist, labeled diagram, guided template instead of open-ended paragraph).

Multilingual Learners (MLL) – Wood 1 (All Units)

Vocabulary & Language Support

- Pre-teach key course vocabulary with pictures and simple definitions for each unit (e.g., safety, rule, accident, emergency, hazard, PPE, goggles, push block, tape measure, grain, plan, cut list, joint, clamp).
- Maintain a Wood 1 word wall with images, labels, and short, student-friendly definitions.
- Provide a picture glossary (paper or digital) that students can use across the semester.
- Allow the use of translation tools and/or bilingual dictionaries when appropriate, especially for directions and reflections.

Instructional Support

- Use short, clear sentences when explaining rules and procedures, and model while you talk (show, point, demonstrate).
- Pair Multilingual Learners with a supportive peer buddy for:
    - Safety walkthroughs and scavenger hunts.
    - "What's Wrong With This Picture?" activities.
    - Matching games, safety posters, tool ID booklets.
    - Measurement, layout, and basic joinery practice.
- Check comprehension with actions and demonstrations, not only verbal questions, for example:
    - "Show me how to wear goggles correctly."
    - "Point to the fire extinguisher/exit/first aid kit."
    - "Show me where you would stand to stay safe."
    - "Show me how you would measure 6 ½ inches."

- Provide visual supports for abstract concepts:
    - Diagrams of measurement marks, plans, cut lists, and grain direction.
    - Step-by-step posters near key tools.
- Allow alternative ways to respond (drawing, labeling, word banks, sentence frames, oral explanation) especially early in the semester.

Gifted & Advanced Students – Wood 1 (All Units)

Depth and Complexity

- Add extension questions during discussions and reflections, for example:
    - "Which shop rule or safety practice do you think is most important and why?"
    - "How could we redesign the shop or procedures to make them safer and more efficient?"
    - "Why do accidents or mistakes still happen even when people know the rules and procedures?"
- Ask students to analyze real or historical incidents (shop accidents, structural failures, tool misuse) or complex build problems and:
    - Identify multiple causes.
    - Separate human error from system/design issues.
    - Propose changes to prevent or reduce risk in the future.
- Challenge them to connect safety, measurement, tool choice, and joinery to real-world quality standards (e.g., building codes, tolerances, durability).

Leadership & Responsibility

- Assign lead roles in group activities across units, such as:
    - Team leader during safety scavenger hunts or measurement relays.
    - "Safety coach" who checks that posters, tool ID booklets, or procedures use accurate rules and vocabulary.
    - Demonstration helper who models proper PPE use, measurement technique, or basic tool setup at the start of class.
- Have them design and promote a class safety or quality campaign, such as:
    - Safety slogan and visual posters.
    - Short announcements or mini-lessons for peers.
    - A class goal (e.g., number of days with 100% PPE use or accurate cleanup).

Advanced Products & Choice

- For written and performance tasks, invite more complex products
- Offer choice in product for demonstrating understanding throughout the semester, such as: Detailed written reflection or technical explanation. Mini safety or training slideshow. New-student safety guide or measurement/checklist tool. Short video or diagram-based tutorial (if allowed by your setting).

Computer Sci Design Thinking

CS.9-12.8.1.12.DA.1	Create interactive data visualizations using software tools to help others better understand real world phenomena, including climate change.
CS.9-12.8.1.12.DA.5	Create data visualizations from large data sets to summarize, communicate, and support different interpretations of real-world phenomena.
CS.9-12.8.1.12.DA.6	Create and refine computational models to better represent the relationships among different elements of data collected from a phenomenon or process.
CS.9-12.8.2.12.ED.1	Use research to design and create a product or system that addresses a problem and make modifications based on input from potential consumers.
CS.9-12.8.2.12.ED.2	Create scaled engineering drawings for a new product or system and make modification to increase optimization based on feedback.
CS.9-12.8.2.12.ED.3	Evaluate several models of the same type of product and make recommendations for a new design based on a cost benefit analysis.
CS.9-12.8.2.12.ED.5	Evaluate the effectiveness of a product or system based on factors that are related to its requirements, specifications, and constraints (e.g., safety, reliability, economic considerations, quality control, environmental concerns, manufacturability, maintenance and repair, ergonomics).
CS.9-12.8.2.12.ED.6	Analyze the effects of changing resources when designing a specific product or system (e.g., materials, energy, tools, capital, labor).
CS.9-12.8.2.12.ITH.2	Propose an innovation to meet future demands supported by an analysis of the potential costs, benefits, trade-offs, and risks related to the use of the innovation.

Career Readiness, Life Literacies and Key Skills Practice

9.2.12.CAP.4	Evaluate different careers and develop various plans (e.g., costs of public, private, training schools) and timetables for achieving them, including educational/training requirements, costs, loans, and debt repayment.
9.2.12.CAP.5	Assess and modify a personal plan to support current interests and post-secondary plans.
9.2.12.CAP.6	Identify transferable skills in career choices and design alternative career plans based on those skills.
9.2.12.CAP.7	Use online resources to examine licensing, certification, and credentialing requirements at the local, state, and national levels to maintain compliance with industry requirements in areas of career interest.

Unit 6: Small Projects and Intro to Set Design

Content Area: **Science**
Course(s): **Wood 1 (s)**
Time Period: **2nd Marking Period**
Length: **4-6 Weeks**
Status: **Not Published**

Summary of the Unit

In this unit, students apply the safety procedures, tool knowledge, and measuring/cutting skills developed in the first five units of Woodshop 1 to complete a series of small, functional projects. Through building a cell phone amplifier, small shelf, and step stool, students strengthen their understanding of measuring, layout, cutting, fastening, sanding, and finishing techniques. They also gain a simple introduction to theatre set design by helping with basic layout, plans, and construction of small props or set pieces.

The unit focuses on accuracy, safe tool use, project planning, and craftsmanship. Students will reflect on their process and finished work, connect their skills to real-world applications, and practice collaborating and problem-solving in a shop environment.

Enduring Understandings

- Safe and correct use of tools is essential for producing quality woodworking projects and preventing injury.
- Accurate measurement, layout, and planning greatly affect the function, strength, and appearance of a project.
- Design decisions (materials, dimensions, joinery, and finish) impact how well a product meets user needs.
- Iterating and reflecting on a project helps improve both craftsmanship and problem-solving skills.
- The same skills used in small projects (measuring, cutting, joining, finishing) apply to larger real-world projects like furniture and stage/set construction.

Essential Questions

- How do safe work habits and proper tool use affect the quality and accuracy of a woodworking project?
- Why is careful measuring, marking, and planning important before cutting and assembling materials?
- In what ways do design choices (size, shape, joinery, materials, finish) impact how a project looks and functions?
- How can mistakes or challenges during a project become opportunities to improve skills and design?
- How are the skills we use for small woodworking projects connected to building sets and props for theatre or other real-world applications?

Unit Summative Assessment and Alternate Assessment Options

Project Completion & Craftsmanship

- Cell phone amplifier: dimensions, function, stability, finish
- Small shelf: accuracy (square, level), sturdiness, surface quality
- Step stool: structural integrity, safety (no wobble, no sharp edges), finish

Project Reflections (written or digital)
Intro to Set Design Task

Design sketches or planning sheets: Checked for completeness and feasibility

Resources

General Shop Resources

- Safety glasses, hearing protection, dust masks
- First aid kit
- Measuring and layout tools: tape measures, rulers, combination squares, speed squares, pencils
- Cutting tools: hand saws, backsaws, miter saw (if allowed), jigsaw and/or band saw (if allowed)
- Drilling & fastening tools: drills/drill press, screwdrivers, clamps, hammers, nailers (if permitted)
- Sanding tools: sanding blocks, sandpaper (80/120/220 grit), power sanders (if available)
- Adhesives & fasteners: wood glue, wood screws, nails, brads, small clamps
- Finishing supplies: paint, stain, clear coat (polyurethane or similar), brushes, rags, drop cloths
- Cleaning supplies: brooms, shop vac, wipes

Cell Phone Amplifier/Stand

- Wood stock (e.g., pine, poplar, or plywood offcuts) sized appropriately for a block or small box
- Templates or teacher-made example(s)
- Hole saw or Forstner bits (for sound chamber, if part of design)
- Sandpaper and finishing materials

Small Shelf

- Pre-cut boards or lumber for sides, top/bottom, and optional back
- Screws and/or wood glue
- Wall-mount hardware (if shelves will be mounted)
- Paint or stain

Step Stool

- Lumber for treads and supports (e.g., 1x10, 2x10, or plywood)

- Screws/bolts and wood glue
- Non-slip pads or grip tape (optional)
- Templates or teacher example for side profile

Theatre Set Design / Props

- Cardboard or foam board for mock-ups
- Plywood or scrap wood for small props or flats (very small scale)
- Simple hardware (screws/nails)
- Paint, markers, tape for labeling sets/props
- Basic set plan or script excerpt (teacher-provided)

Unit Plan

Topic/Selection Timeframe	General Objectives	Instructional Activities	Assessments	
Small/ Independent Projects 4-5 weeks	SWBAT Safely operate basic hand tools (and power tools approved for this course) while following all classroom safety rules. SWBAT Accurately measure and mark wood to a specified length using appropriate measuring tools. SWBAT Cut, drill, and sand wood to create parts that meet project specifications. SWBAT Assemble wooden components using glue and mechanical fasteners to create strong, stable joints. SWBAT	**General Woodworking Project Procedures** Safety & Tool Orientation Review classroom safety rules and PPE (goggles, hair tied back, etc.). Demonstrate safe use of the hand tools (and any approved power tools) needed for the project. Have students practice proper tool handling before starting the build. Project Brief & Design Present the project goal (prop, mini set piece, simple build, etc.).Show or discuss a simple drawing/sketch of the final product. Students read and/or create a basic sketch with measurements and key parts labeled. Measurement & Marking Demonstrate how to measure and mark wood accurately to a specified length. Students measure and mark all needed pieces using appropriate tools (tape measure, ruler,	Independent Projects w/check-ins	

	Apply basic finishing techniques (sanding, painting, staining) to protect and improve the appearance of a project. SWBAT Read and/or create simple project drawings or sketches and follow them to complete a build. SWBAT Reflect on the building process to identify successes, challenges, and areas for improvement. SWBAT Describe how woodworking skills are used in theatre set design and simple prop construction.	square). Cutting, Drilling, and Shaping Model correct cutting, drilling, and sanding techniques for the project parts. Students cut, drill, and sand pieces to match their measurements and project specifications. Teacher circulates to check accuracy and safety during this step. Assembly of Components Demonstrate how to dry-fit parts before final assembly. Students assemble parts using wood glue and mechanical fasteners (e.g., screws, nails, brads) to create strong, stable joints. Allow for clamping/drying time as needed and have students check for square and stability. Finishing Techniques Review and/or demonstrate sanding, painting, and/or staining options appropriate to the project. Students sand surfaces smooth and apply selected finishes to protect and improve appearance.		

		Connection to Theatre & Props Briefly discuss how similar skills are used in real theatre set design and prop construction. Have students identify which parts of their build are similar to flats, platforms, or common props. Reflection & Evaluation Students complete a short reflection on what went well, what was challenging, and what they would do differently next time. Teacher assesses safety, accuracy, craftsmanship, and following of directions using a rubric or checklist. This framework can stay the same while you swap out specific projects (tool trays, mini platforms, simple props, etc.).		
Intro to Set Design (small props) Ongoing	SWBAT describe, in simple terms, what a theatre set designer does. SWBAT read or help create a basic	Intro to Set Design (Discussion + Visuals) • Show a few images of stage sets; briefly explain the role of the set designer and crew. • Connect to class: “We’re	Set Design Tasks	

	sketch/plan for a small set piece or prop. SWBAT use measuring, cutting, and assembly skills to help create a small prop or simple flat. SWBAT explain how woodworking skills are used in theatre and stagecraft.	going to use our woodshop skills to help with small props/set pieces." Select a Simple Task • The teacher presents 1–2 very simple set needs (e.g., a small box that looks like a crate, a sign, a small platform, a fake window frame, etc.). • As a class or in small groups, students sketch a basic plan (with dimensions and labeled parts). Build/Assist • Students measure, cut, and assemble simple pieces under teacher guidance. • Emphasis on safety, teamwork, and following a plan. Finishing Touches • Students paint or label props to match the "theatre" need		

		(simple colors, no detailed scenic painting unless you want it). Mini Reflection / Share Out • Students briefly share: What did we build? How is it similar to or different from our other projects? • Write a short reflection on how woodworking skills can help a theatre program.		

Standards for Course Content Area and Cross Content Standards Addressed

	Theatre artists make choices to convey meaning.
	How do theatre artists use tools and techniques to communicate ideas and feelings?
9.3.12.AC.1	Use vocabulary, symbols and formulas common to architecture and construction.
9.3.12.AC.2	Use architecture and construction skills to create and manage a project.
9.3.12.AC.6	Read, interpret and use technical drawings, documents and specifications to plan a project.
9.3.12.AC-CST.2	Describe the approval procedures required for successful completion of a construction project.
9.3.12.AC-CST.5	Apply practices and procedures required to maintain jobsite safety.
9.3.12.AC-CST.8	Demonstrate the construction crafts required for each phase of a construction project.
9.3.12.AC-DES.1	Justify design solutions through the use of research documentation and analysis of data.
9.3.12.AC-DES.2	Use effective communication skills and strategies (listening, speaking, reading, writing and graphic communications) to work with clients and colleagues.
9.3.12.AC-DES.6	Apply the techniques and skills of modern drafting, design, engineering and construction to projects.

Suggested Modifications for Students with Disabilities, 504 eligible, Multilingual Learners, At Risk Students and Gifted Students

Students with Disabilities (including students with 504 plans) – Wood 1 (All Units)

Content & Directions

- Provide simplified, step-by-step directions for key procedures and safety rules, using pictures/icons whenever possible.
- Use visuals for all major tools, machines, and safety equipment (photo + label: goggles, hearing protection, dust mask, push block, fire extinguisher, first aid kit, etc.).
- Highlight or bold key safety and process words (danger, must, never, always, PPE, stop, off, on, measure, mark, cut, clamp).
- Break longer texts (safety contracts, reflections, project explanations) into short chunks with guiding questions or prompts.
- Offer sentence starters and writing frames for written work across units
- When introducing new tools or skills, provide clear, numbered steps and keep language concrete.

Process & Participation

- Allow extra time for:
    - Safety walkthroughs and scavenger hunts.
    - "What's Wrong With This Picture?" activities.
    - Safety quizzes and written reflections.
    - Hands-on practice with measurement, layout, hand tools, and power tools.
- Let students work with a partner or small group during:
    - Safety scavenger hunts.
    - Matching games (PPE to hazard, tools to function).
    - Poster creation, tool ID booklets, and simple planning activities.
- Provide checklists for recurring tasks, such as:
    - Before class: put on goggles, tie hair back, no loose jewelry, secure loose clothing, clear workspace.
    - Before using a tool: get teacher permission, put on PPE, check tool condition, clear area.
    - When I see something unsafe: 1) Stop, 2) Move away, 3) Tell the teacher.
- Frequently model and practice safe behavior and tool procedures, then have students repeat, explain, or demonstrate the steps back.

- Offer guided notes, graphic organizers, and partially completed diagrams for complex ideas (e.g., project plans, cut lists, grain direction).

Environment & Supports

- Seat students where they can clearly see demos, visuals, and the board, and easily access safety equipment.
- Use consistent color coding throughout the shop and on diagrams:
    - Red = danger zones / do not cross.
    - Green = exits / first aid.
    - Blue = PPE stations / eye-wash.
- Provide frequent breaks or movement opportunities (e.g., passing out materials, helping with the safety walkthrough) if attention and regulation are a challenge.
- Implement all IEP and 504 accommodations, which may include:
    - Read-aloud or clarified directions for quizzes and written tasks.
    - Reduced number of items or shortened assignments.
    - Repeated directions, chunked tasks, and frequent check-ins.
    - Alternative formats for demonstrating understanding (oral response, checklist, labeled diagram, guided template instead of open-ended paragraph).

Multilingual Learners (MLL) – Wood 1 (All Units)

Vocabulary & Language Support

- Pre-teach key course vocabulary with pictures and simple definitions for each unit (e.g., safety, rule, accident, emergency, hazard, PPE, goggles, push block, tape measure, grain, plan, cut list, joint, clamp).
- Maintain a Wood 1 word wall with images, labels, and short, student-friendly definitions.
- Provide a picture glossary (paper or digital) that students can use across the semester.
- Allow the use of translation tools and/or bilingual dictionaries when appropriate, especially for directions and reflections.

Instructional Support

- Use short, clear sentences when explaining rules and procedures, and model while you talk (show, point, demonstrate).
- Pair Multilingual Learners with a supportive peer buddy for:

    - Safety walkthroughs and scavenger hunts.
    - “What’s Wrong With This Picture?” activities.
    - Matching games, safety posters, tool ID booklets.
    - Measurement, layout, and basic joinery practice.
- Check comprehension with actions and demonstrations, not only verbal questions, for example:
    - “Show me how to wear goggles correctly.”
    - “Point to the fire extinguisher/exit/first aid kit.”
    - “Show me where you would stand to stay safe.”
    - “Show me how you would measure 6 ½ inches.”
- Provide visual supports for abstract concepts:
    - Diagrams of measurement marks, plans, cut lists, and grain direction.
    - Step-by-step posters near key tools.
- Allow alternative ways to respond (drawing, labeling, word banks, sentence frames, oral explanation) especially early in the semester.

Gifted & Advanced Students – Wood 1 (All Units)

Depth and Complexity

- Add extension questions during discussions and reflections, for example:
    - “Which shop rule or safety practice do you think is most important and why?”
    - “How could we redesign the shop or procedures to make them safer and more efficient?”
    - “Why do accidents or mistakes still happen even when people know the rules and procedures?”
- Ask students to analyze real or historical incidents (shop accidents, structural failures, tool misuse) or complex build problems and:
    - Identify multiple causes.
    - Separate human error from system/design issues.
    - Propose changes to prevent or reduce risk in the future.
- Challenge them to connect safety, measurement, tool choice, and joinery to real-world quality standards (e.g., building codes, tolerances, durability).

Leadership & Responsibility

- Assign lead roles in group activities across units, such as:
    - Team leader during safety scavenger hunts or measurement relays.
    - "Safety coach" who checks that posters, tool ID booklets, or procedures use accurate rules and vocabulary.
    - Demonstration helper who models proper PPE use, measurement technique, or basic tool setup at the start of class.
- Have them design and promote a class safety or quality campaign, such as:
    - Safety slogan and visual posters.
    - Short announcements or mini-lessons for peers.
    - A class goal (e.g., number of days with 100% PPE use or accurate cleanup).

Advanced Products & Choice

- For written and performance tasks, invite more complex products
- Offer choice in product for demonstrating understanding throughout the semester, such as: Detailed written reflection or technical explanation. Mini safety or training slideshow. New-student safety guide or measurement/checklist tool. Short video or diagram-based tutorial (if allowed by your setting).

Computer Sci Design Thinking

CS.9-12.8.2.12.ED.1	Use research to design and create a product or system that addresses a problem and make modifications based on input from potential consumers.
CS.9-12.8.2.12.ED.2	Create scaled engineering drawings for a new product or system and make modification to increase optimization based on feedback.
CS.9-12.8.2.12.ED.3	Evaluate several models of the same type of product and make recommendations for a new design based on a cost benefit analysis.
CS.9-12.8.2.12.ED.4	Design a product or system that addresses a global problem and document decisions made based on research, constraints, trade-offs, and aesthetic and ethical considerations and share this information with an appropriate audience.

Career Readiness, Life Literacies and Key Skills Practice

9.2.12.CAP.4	Evaluate different careers and develop various plans (e.g., costs of public, private, training schools) and timetables for achieving them, including educational/training requirements, costs, loans, and debt repayment.
9.2.12.CAP.5	Assess and modify a personal plan to support current interests and post-secondary plans.
9.2.12.CAP.6	Identify transferable skills in career choices and design alternative career plans based on those skills.
9.2.12.CAP.7	Use online resources to examine licensing, certification, and credentialing requirements at the local, state, and national levels to maintain compliance with industry requirements in areas of career interest.
9.2.12.CAP.8	Determine job entrance criteria (e.g., education credentials, math/writing/reading

	comprehension tests, drug tests) used by employers in various industry sectors.
9.2.12.CAP.9	Locate information on working papers, what is required to obtain them, and who must sign them.
9.2.12.CAP.10	Identify strategies for reducing overall costs of postsecondary education (e.g., tuition assistance, loans, grants, scholarships, and student loans).
9.2.12.CAP.14	Analyze and critique various sources of income and available resources (e.g., financial assets, property, and transfer payments) and how they may substitute for earned income.
9.2.12.CAP.21	Explain low-cost and low-risk ways to start a business.
9.2.12.CAP.22	Compare risk and reward potential and use the comparison to decide whether starting a business is feasible.
9.2.12.CAP.23	Identify different ways to obtain capital for starting a business.