Unit 4: Cutting and Shaping

Content Area: **Applied Technology**
Course(s):
Time Period: **Marking Period 1**
Length: **4 Weeks**
Status: **Published**

Brief Summary of Unit

Students will learn about the many types of cutting and shaping tools available to today's woodworkers. Students will learn about the various types of saws and shaping tools and be able to safely use them for their intended purpose. The students will learn advanced operations on the table saw, radial arm saw, band saw, scroll saw, and power miter box. They will learn about the thickness planer and the jointer. The students will learn about and understand the specific safety concerns, and precautions related to the machines they will be working with. They will learn about the uniqueness of each machine and have an opportunity to experiment with each. Students will learn about what features and characteristics to look for when purchasing a saw.

Revised July 2023

Essential Questions/ Enduring Understandings

Essential Questions

Why are accurate cutting and shaping skills important to the quality of a wood project?

What is safety consciousness?

Enduring Understandings

All power machines are inherently dangerous, concentration and caution must be exercised when operating all machinery.

Al saw blades are either a rip blade or a crosscut blade and both types have a specific purpose.

Objectives

Students will know:

key terms and tool names.

types of power saws and their uses.
the difference between a ripping blade and a crosscut blade.
how to choose the correct type of saw.
the safety rules pertaining to the safe operation of power saws.
how the table saw is used in industry.
the types of blades used with the table saw and how they are properly used.
how to operate the safety guards.
most accidents are not caused by the machine but by the operator.

Students will be skilled at:
using cutting and shaping tools safely.
safety practices when using any tool that needs to be plugged in.
checking the stock before cutting it on a power saw.
changing the thickness of a board and how to square up all four sides.
safely starting, adjusting, and stopping a power machine.

Learning Plan

Preview the essential questions and connect to learning throughout the unit.

Introduce new vocabulary.

Writing prompts as homework to be shared and evaluated in class.

Present lesson on cutting and shaping tools.

Demonstrate the correct method of both crosscutting and ripping a board.

Demonstrate how to square a board using the table saw.

Demonstrate the proper use of the miter saw.

Have students cut out project parts using various power saws.

Present lesson on operation of the table saw and miter Saw.

Review safety procedures for using all power equipment.

Demonstrate the preparation process for cutting stock with a power saw.

Demonstrate how to use the safety guards and the dust collection system.

Demonstrate how to adjust the various saws for proper operation.

Explain and demonstrate how to attach the dado blade to the table saw.

Have students use the Internet to create a timeline of cutting tool technology.

Demonstrate how to properly hold the miter gauge.

Demonstrate the procedure for squaring a board on a power saw.

Demonstrate the procedure for cutting a raised panel on the table saw.

Present and discuss the videos “Operating the Table Saw” and “Operating the Miter Saw”

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Present lesson on the jointer and the surface planer.

Demonstrate the process of squaring a board using the jointer, table saw and the surface planer.

Have students read relevant material in the woodworking textbook.

Allow students to work independently on their individual projects.

Have students self – evaluate their work using rubric

Assessment

Formative Assessment

Do Now Questions

Exit Tickets

Participation in class discussions on safety with power tools/machines

Writing Prompt on Power Machine/Tool Safety

Demonstrate proper use of Power Tools and Machines

Proper use of vocabulary

Summative Assessment

Practicum Quizzes on the proper technique of various power tools/machines

Identification Quiz on machine part names and functions

Completed Project graded with a rubric

Unit Test

Benchmark Assessment

Mid Term Exam

Final Exam

Alternative Assessment

Presentation on Power Tool/Machine Safety

Materials

Woodworking Textbook

Internet

Power Tools Machinery: table saw, radial arm saw, band saw, scroll saw, and power miter box

Shaping Tools: table saw, radial arm saw, band saw, scroll saw, and power miter box

Standards

9.4.12.CT	Critical Thinking and Problem-solving
MA.K-12.5	Use appropriate tools strategically.
MA.K-12.6	Attend to precision.
MA.K-12.7	Look for and make use of structure.
LA.RST.11-12.2	Determine the central ideas, themes, or conclusions of a text; summarize complex concepts, processes, or information presented in a text by paraphrasing them in simpler but still accurate terms.
LA.RST.11-12.4	Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to grades 11-12 texts and topics.
LA.RI.11-12.4	Determine the meaning of words and phrases as they are used in a text, including figurative, connotative, and technical meanings; analyze how an author uses and refines the meaning of a key term or terms over the course of a text (e.g., how Madison defines faction in Federalist No. 10).
LA.RI.11-12.5	Analyze and evaluate the effectiveness of the structure an author uses in his or her exposition or argument, including whether the structure makes points clear, convincing, and engaging.
LA.RST.11-12.7	Integrate and evaluate multiple sources of information presented in diverse formats and media (e.g., quantitative data, video, multimedia) in order to address a question or solve a problem.

ED	Engineering Design
ITH	Interaction of Technology and Humans
NT	Nature of Technology
CRP.K-12.CRP8	Utilize critical thinking to make sense of problems and persevere in solving them.
CAEP.9.2.12.C.3	Identify transferable career skills and design alternate career plans.

Suggested Strategies for Modification

https://docs.google.com/spreadsheets/d/1gk0WLBehVNuQkRKLMYATvY5Zk0vpdBKbdrcODZS_YFw/edit?usp=sharing