

WOOD MANUFACTURING 10

Description

This beginning level course offers a general introduction to the world of woodworking. Students will learn about the materials and processes used to change rough lumber into useful finished products. Development of hand and machine tool skills, safe work habits and proper construction techniques will be stressed. Students will develop insights into industry through hands-on project work.

Course Overview

Course Objectives

Students should:

- identify and safely use resources, processes, concepts, and tools related to woodworking technology.
- apply practical technological methods in a problem-solving situation.
- use mathematics and science concepts to solve material processing problems.
- identify and construct various types of wood joints used in project work.
- apply a basic finish to a wooden project using proper materials and techniques.
- develop safe woodworking habits and practices.
- identify various types of wood and other products used in the woodworking industry.
- utilize skills and knowledge to build a project.

Essential Questions

- How do safety practices influence wood manufacturing and the work environment?
- What are the essential skills necessary to be successful in the wood manufacturing industry and construction trade?
- How does appropriate planning and execution impact results?
- How does teamwork impact production?

Assessments

- Written tests and quizzes on material presented
- Verbal questioning and explanation
- Performance Based Assessment of a constructed wood project. Examples:
 - 2-drawer case
 - Jewelry Box
 - Tool Box
- Teacher observation

Content Outline

- I. [Unit 1](#) - Course Introduction
- II. [Unit 2](#) - Measurement and Layout
- III. [Unit 3](#) - Tools and Machines
- IV. [Unit 4](#) - Joinery and Assembly
- V. [Unit 5](#) - Finishing

Standards

Connecticut Technology Education Standards have been met in the following area:

- *Wood Technology*

Grade Level Skills

Students will:

- apply measurements accurately.
- construct a lip drawer and common wood joints.
- demonstrate correct methods of finish application.
- demonstrate cutting operations on the band saw and scroll saw.
- demonstrate the procedure for measuring out stock and squaring a board using the six step method.

		<ul style="list-style-type: none"> • demonstrate the proper and safe use of jointing and planing equipment. • demonstrate the proper and safe use of the drill press, machine sander. • demonstrate the proper procedure for applying glue and clamping a project. • demonstrate the proper procedures for ripping and crosscutting on the table saw. • demonstrate the safe practices to be followed when using tools, equipment, and machines. • identify and use different types and grades of abrasive paper. • identify and use the appropriate saws for cutting, curves, ripping and crosscutting wood. • identify and use various hand tools. • identify various types of wood joints and their applications. • practice all general shop safety rules and policies. • prepare wood surfaces for finishing and finish to a desired appearance. • safely use the table and radial arm saws.
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Pacing Guide				
1st Marking Period			2nd Marking Period	
Month 1	Month 2	Month 3	Month 4	Month 5
<u>Unit 1</u>	<u>Unit 2</u>	<u>Unit 3</u>	<u>Unit 4</u>	<u>Unit 5</u>
<u>Course Introduction</u>	<u>Measurement And Layout</u>	<u>Tools and Machines</u>	<u>Joinery and Assembly</u>	<u>Finishing</u>
2 Weeks	2 Weeks	4 Weeks	7 Weeks	3 Weeks

Unit 1 – Course Introduction (Safety, practices, policies) 2 Weeks [top](#)

Standards

Wood Technology

WM.02 Describe and demonstrate the procedures related to workplace and job-site safety including personal protective equipment, machine safety, and material handling practices.

WM.02.01, WM.02.02, WM.02.03, WM.02.04

Unit Objectives

Students will be able to:

- describe and demonstrate the procedures related to workplace and job-site safety including personal protective equipment, machine safety, and material handling practices.
- describe safety practices for specific machines.
- identify and describe various types of personal protective equipment.

Essential Question

- How do safety practices influence wood manufacturing and the work environment?

Focus Questions

- What needs to be done to ensure student safety in the wood shop?
- What are the basic shop safety rules?

Assessments

- Written Safety quizzes and tests
- Teacher Observation

Skill Objectives

Students will:

- develop, demonstrate and practice safe working habits.
- practice lab safety policies.
- demonstrate safe material handling practices.
- describe workplace and jobsite safety procedures.
- describe safety practices for specific machines.

Unit 2 – Measurement and Layout - 2 weeks [top](#)

Standards

Wood Technology

WM.03 Identify and describe the safe and appropriate use of various types of hand and power tools and machinery used for building.

WM.03.01

WM.04 Explain and be able to demonstrate the methods involved in turning raw materials into useable products.

WM.04.01, WM.04.02

Unit Objectives

Students will be able to:

- describe rough drawings and sketches.
- explain and use fractional dimensions.
- identify, use and maintain measuring layout, and marking tools.

Essential Questions

- How does appropriate planning and execution impact results?

Focus Questions

- What tools are used as “Layout” tools?
- How do we measure correctly?
- What are the three dimensions of a board?
- What are dimensions and how are they applied to sketches?

Assessments

- Layout tool identification test
- Measurement Assessments
- Application Assessments (Demonstration)
- Ruler increment layout worksheet
- Parts of a board quiz

Skill Objectives

Students will:

- utilize measurement tools accurately.
- lay out dimensions on project materials.
- prepare rough drawings and sketches.
- extrapolate information from a set of plans.
- layout geometric shapes using templates.
- demonstrate the procedure for measuring out stock and squaring a board.

Unit 3 – Tools and Machines, 4 weeks [top](#)

Standards

Wood Technology

WM.03 Identify and describe the safe and appropriate use of various types of hand and power tools and machinery used for building.

WM.03.02, WM.03.03, WM.03.04, WM.03.05, WM.03.06, WM.03.07, WM.03.08, WM.03.09, WM.03.10, WM.03.11

Unit Objectives

Students will be able to:

- identify proper use and function of portable power cutting tools, fastening tools and hand tools, portable power tools, stationary saws and specialty machinery.
- explain and demonstrate correct use of surfacers.
- identify functions of wood lathes.
- identify and demonstrate use and function of sanders.

Essential Question

- What are essential skills with tools and machines necessary to be successful in the wood manufacturing industry and construction trade?

Focus Questions

- Can the student use hand tools properly and safely?
- Can the student use hand held power tools properly and safely?
- Can the student use machinery properly and safely?
- Is the student beginning to learn and feel comfortable with woodworking?
- Which saws are used for straight cutting?
- Which saws are used for cutting curves?
- Which direction does a file actually cut?
- What is the difference between ripping and crosscutting?

Assessments

- Student performance with hand tools
- Tool identification and use quiz
- Woodworking machinery performance (e.g., drill presses, jointers, surface planers, table saws, power miter saws, band saws, scroll saws, and stationary sanders.)

Skill Objectives

Students will:

- demonstrate proper use and function of portable power cutting tools, fastening tools, hand tools, stationary saws and woodworking machinery.
- demonstrate proper setup procedures for the drill press, lathe, and shaper.
- safely and properly use the table and radial arm saws.
- demonstrate the proper procedures for ripping and crosscutting on the table saw.
- cut lumber to correct size using machine tools.
- surface plane lumber to size.
- use tools and machinery to cut, plane, joint and sand.
- construct a simple furniture piece.
- properly and safely joint edges of a board on a jointer.

Unit 4 – Joinery and Assembly- 7 weeks [top](#)

Standards

Wood Technology

WM.04 Explain and be able to demonstrate the methods involved in turning raw materials into useable products.

WM.04.01, WM.04.02, WM.04.05, WM.04.06, WM.04.09, WM.04.11, WM.04.12, WM.04.13, WM.04.14

WM.05 Identify and assemble wood joinery and install mechanical fasteners.

WM.05.07, WM.05.08, WM.05.11, WM.05.12, WM.05.13, WM.05.14, WM.05.15

Unit Objectives

Students will be able to:

- identify various types of basic joints.
- explain the steps in preparing wood for gluing.
- explain the uses of different types of fasteners.

Essential Question

- What affect does joinery have on the strength and durability of a wood product?

Focus Questions

- Why are certain joints used in different applications?
- What type of joints should be used in various applications?
- Why use a chemical fastener?
- How does the use of mechanical fasteners increase strength?
- Why is it important to use clamping pressure when using glues and adhesives?
- How does a shelf get connected to the project side?
- What are the 3 types of drawer front construction?

Assessments

- Application Assessment
- Quality /Accuracy Evaluation
- Evaluation of wood joints
- Joint identification test
- Board Squaring Project

Skill Objectives

Students will:

- construct various types of wood joints.
- demonstrate the procedure for applying glue and clamping a project.
- properly drill holes and install wood screws and set nails in wood stock.
- construct a project using proper joinery.
- layout and fabricate an end lap, a miter, a dado, a dowel joint and a rabbet joint.

Unit 5 – Finishing- 3 weeks [top](#)

Standards

Wood Technology

WM.06 Identify and demonstrate sanding and gluing techniques.

WM.06.01, WM.06.02, WM.06.03, WM.06.04, WM.06.05, WM.06.06, WM.06.07, WM.06.08

WM.16 Finish woodwork.

WM.16.01, WM.16.02, WM.16.04, WM.16.07

Unit Objectives

Students will be able to:

- identify and demonstrate sanding and gluing techniques.
- identify common finishes used in the wood manufacturing industry.
- describe abrasive grit systems.
- identify different types and grades of abrasive paper.
- identify the most common finishes used in the woods laboratory.

Essential Question

- Why is it important to choose the correct finish based on application of a wood product?

Focus Questions

- What is the importance of abrasives in wood manufacturing and finishing?
- Why is it important to understand the grit system?
- Why must proper sanding methods be followed to achieve a desired surface finish?
- What is the importance of choosing the appropriate finish for a given application?
- What are the different types of finishes?

Assessments

- Application Assessment
- Quality /Accuracy Evaluation
- Completed project finish evaluation

Skill Objectives

Students will:

- demonstrate the proper use of abrasive paper on wood grain surfaces.
- prepare wood surfaces for finishing and finish to a desired appearance.
- demonstrate the correct methods of finish application.