

**TRUMBULL PUBLIC SCHOOLS**  
**Trumbull, Connecticut**

**Wood Technology I**  
**Grade 9-12**

**2023**

**(Last revision date: 2012)**

**Curriculum Writing Team**

**Christina Rusate**  
**Joe Amaturio**  
**Matt Bracksieck**  
**Susan C. Iwanicki, Ed.D.**

**CTE Department Chair**  
**CTE Teacher, Trumbull High School**  
**CTE Teacher, Trumbull High School**  
**Assistant Superintendent**

# **Wood Technology I**

## **Grade 9-12**

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The Trumbull Board of Education will continue to take Affirmative Action to ensure that no persons are discriminated against in its employment.

## CORE VALUES AND BELIEFS

The Trumbull High School community engages in an environment conducive to learning which believes that all students will **read and write effectively**, therefore communicating in an articulate and coherent manner. All students will participate in activities **that present problem-solving through critical thinking**. Students will use technology as a tool applying it to decision making. We believe that by fostering self-confidence, self-directed and student-centered activities, we will promote **independent thinkers and learners**. We believe **ethical conduct** to be paramount in sustaining the welcoming school climate that we presently enjoy.

Approved 8/26/2011

## INTRODUCTION & PHILOSOPHY

Wood Technology I is a semester-long elective course available to 9th, 10th, 11th, and 12th graders. The course is offered through the Technology Education Department and provides interested students with the knowledge and understandings necessary to operate wood working tools and materials to create and produce a final product. This course is being offered to any students who are interested in the field of Woodworking and would like to learn more about the process of creating wood products. There is no prerequisite experience needed for this course.

Through hands-on learning, students will develop an understanding of the tools and skills that work together to result in a final product that is both useful and aesthetically pleasing. Instruction will be given on hand tools, machine tools and other woodworking equipment that students will be permitted to use. This instruction will be given in the form of lectures, notes and demonstrations. “Hands-on” laboratory experiences constructing projects will allow students to develop valuable woodworking skills.

## COURSE GOALS

- |              |   |
|--------------|---|
| <b>WM.02</b> | <b>Describe and demonstrate the procedures related to workplace and job-site safety including personal protective equipment, machine safety, and material handling practices.</b> |
| WM.02.01     | Demonstrate safe material handling practices  |
| WM.02.02     | Demonstrate and explain knowledge of workplace safety procedures.   |
| WM.02.03     | Demonstrate and explain knowledge of personal safety practices pertaining to eye wear, footwear, clothing, and personal protective equipment (PPE) used in wood technology.       |
| WM.02.05     |   |

WM.02.06	Demonstrate knowledge of proper use, storage, and disposal of hazardous materials following OSHA's proper safety practices for a woodworking facility.
	Obtain, read and follow SDS (Safety Data Sheets) information.
<b>WM.03</b>	<b>Identify and describe the safe and appropriate use of various types of hand and power tools and machinery used for building.</b>
WM.03.01	Identify, use, and maintain the following measuring, layout, and marking tools: steel rule, tape measure, combination square, sliding "T" bevel, and compass.
WM.03.02	Identify proper use and function of the following portable power tools: circular saw, drill, jig/saber saw, finishing sanders, and routers.
WM.03.03	Identify proper use and function of the following fastening tools: hammer, Phillip head screw driver, and slotted/flat head screw driver
WM.03.04	Demonstrate and explain knowledge of proper use and storage of portable power tools.
WM.03.05	Demonstrate and explain knowledge of proper use and storage of basic hand tools.
WM.03.07	Identify proper use and function of stationary saws.
WM.03.08	Identify the proper use and function specialty machinery (e.g. drill presses. jointers. surface planers. table saws. power miter saws. band saws. scroll saws. and stationary sanders.
WM.03.09	Identify proper use and function of the table and miter saws.
WM.03.10	Explain and demonstrate correct use of planers.

WM.03.14	Select appropriate tools, procedures, and/or equipment.
<b>WM.04</b>	<b>Explain and be able to demonstrate the methods involved in turning raw materials into useable products.</b>
WM.04.01	Describe and interpret technical drawings.
WM.04.02	Describe and prepare rough drawings and sketches.
WM.04.03	Explain and prepare a cut list or bill of material from a basic plan and assembly drawing.
WM.04.04	Interpret a design to facilitate replication
WM.04.05	Describe and identify fractional measurements from a basic plan and assembly drawings.
WM.04.07	Extrapolate information from a set of plans.
WM.04.08	Measure accurately to a sixteenth of an inch.
WM.04.10	Prepare stock for use.
WM.04.11	Consider the natural characteristics of grain, knots, and checks when laying out a board.
WM.04.12	Identify and assemble the following types of joints: butt, miter, dado, rabbet, and lap.
WM.04.13	Identify and select the proper cutting process based on grain direction.
WM.04.14	Identify characteristics and applications of the following deciduous hardwoods: oak, maple, and poplar.
WM.04.19	Identify and describe the purpose and use of the following woodworking fasteners: common nails, round head screws, flat head screws, and oval head screws.

WM.04.20	Identify, describe purpose of and use woodworking adhesives.
WM.04.21	Identify and describe the purpose of the following clamping devices: bar clamp, c-clamp, parallel/hand screw clamp, and spring clamps.
WM.04.22	Identify and apply various wood finishes for interior and exterior, with brush or wipe on, for the following: paint, stain, and clear coat.
WM.04.23	Describe the abrasive grit numbering grading system.

The following course goals derive from the 2012 Connecticut Technology Education Standards.

### **COURSE ENDURING UNDERSTANDINGS**

Students will understand that...

- It is important to follow shop safety procedures.
- It is important to follow plans when constructing projects.
- It is important to use machines properly and safely.
- Each machine and tool has a specific purpose.
- They have the ability to achieve success in creation of projects.

### **COURSE ESSENTIAL QUESTIONS**

- Why is it important that everyone understands and follows the safety procedures in and around the shop?
- Why do we need to be able to read a ruler?
- How do you safely use hand tools and/or power tools to create a final product?
- Why is it important to use the proper tool for the job?
- How do woodworking machines better facilitate construction?
- What is the process for taking raw materials and plans to create a finished product?
- What are the important decisions a woodworker needs to make when creating a finished product?
- How do plans help you create a woodworking project?
- Why is it important to follow a set of plans when creating a final product?

### **COURSE KNOWLEDGE & SKILLS**

- Students will know . . .
  - How to read plans
  - how to read a scale

- o how to properly and safely use tools for their intended purpose
  - o how to correctly set up and use machines for their intended purpose
  - o how to prepare stock for use in a project
  - o how to assemble and finish wood projects
- Students will be able to . . .
  - o select projects and interpret plans appropriate for their skill level
  - o determine which tool to use for a particular job
  - o identify and solve problems encountered when creating projects
  - o work and think independently
  - o work cooperatively when called upon

## **COURSE SYLLABUS**

### **Course Name**

Wood Technology I

### **Level**

Elective

### **Prerequisites**

None

### **General Description of the Course**

Wood Technology I is designed for any student regardless of his/her experience with woodworking. Students are introduced to the basics of measurement, proper use, and safety of hand tools and machines, design, and constructions. An emphasis will be placed on safety. Students will have the opportunity to construct multiple projects; some of his/her own designs.

### **Assured Assessments**

Formative Assessments:

- o Plan reading quiz
- o Teacher Check-ins
- o Student final project Build Worksheet

Summative Assessments:

- o Safety Quizzes
- o Measuring quizzes
- o Cell Phone Holder
- o Step Stool
- o Independent Project



## UNIT 1 Shop Safety

### Unit Goals

At the completion of this unit, students will:

<b>WM.02</b>	<b>Describe and demonstrate the procedures related to workplace and job-site safety including personal protective equipment, machine safety, and material handling practices.</b>
WM.02.01	Demonstrate safe material handling practices
WM.02.02	Demonstrate and explain knowledge of workplace safety procedures.
WM.02.03	Demonstrate and explain knowledge of personal safety practices pertaining to eye wear, footwear, clothing, and personal protective equipment (PPE) used in wood technology.
WM.02.05	Demonstrate knowledge of proper use, storage, and disposal of hazardous materials following OSHA's proper safety practices for a woodworking facility.
WM.02.06	Obtain, read and follow SDS (Safety Data Sheets) information.

### Unit Essential Questions

- Why is it important that everyone understands and follows the safety procedures in and around the shop?

### Unit Focus Questions

- Where is the power emergency stop?
- Where are the fire extinguishers?
- Where is the fire escape route?
- Where is the nurse's office located?
- What are the different types of Personal Protective Equipment (PPE)?
- Where is the location of the emergency eyewash station?
- What is the SDS sheet and where is it located?

## **Unit Scope and Sequence**

- Locations of emergency equipment.
- Fire escape route.
- SDS with specific detail about the chemical properties, health and safety hazards of each chemical product.
- Proper use of personal safety practices and personal protective equipment (PPE).

## **Unit Assured Assessments**

Summative Assessments:

- Written assessment covering key points on shop safety.

## **Resources**

### Core

- Safety Data Sheets
- Safety worksheets
- [Power Tool Institute: Power Tool Accidents: They can be prevented video](#)

### Supplemental

- Note taking worksheets
- Power Tool Institute: [Power Tool Safety — It's In Your Hands](#)
- Power Tool Institute: [La Seguridad de la Herramienta Eléctrica - Está En Sus Manos](#)

## **Key Vocabulary**

- SDS
- PPE

## **Time Allotment**

- Approximately 1 Week

## UNIT 2 Measurement

### Unit Goals

At the completion of this unit, students will:

<b>WM.04</b>	<b>Explain and be able to demonstrate the methods involved in turning raw materials into useful products.</b>
WM.03.01	Identify, use, and maintain the following measuring, layout, and marking tools: steel rule, tape measure, combination square, sliding “T” bevel, and compass.
WM.04.05	Describe and identify fractional measurements from a basic plan and assembly drawings.
WM.04.08	Measure accurately to a sixteenth of an inch.

### Unit Essential Questions

- Why do we need to be able to read a ruler?

### Unit Focus Questions

- What do the lines on a ruler mean?
- How do you convert feet to inches?
- How do you reduce a fraction to its lowest terms?

### Unit Scope and Sequence

- Provide unit material at varied reading levels using multiple resources
- Teach the sixteen parts of an inch using 3-foot-long scale model of an inch as a visual
- $1/16''$ ,  $1/8''$ ,  $1/4''$ ,  $1/2''$
- Division of measurements
- Using a square for measuring and marking

### Unit Assured Assessments

Summative Assessments:

- Written quiz that aligns with the teacher-constructed note-taking guide

## Resources

### Core

- Measuring Handouts

### Supplemental

- [The Ruler Game](#)

## Key Vocabulary

- Nominal Measurement
- Actual Size

## Time Allotment

Approximately 1 Week

## UNIT 3

### Hand Tools & Power Tools

## Unit Goals

At the completion of this unit, students will:

<b>WM.03</b>	<b>Identify and describe the safe and appropriate use of various types of hand and power tools and machinery used for building.</b>
WM.03.02	Identify proper use and function of the following portable power tools: circular saw, drill, jig/saber saw, finishing sanders, and routers.
WM.03.03	Identify proper use and function of the following fastening tools: hammer, Phillip head screw driver, and slotted/flat head screw driver
WM.03.04	Demonstrate and explain knowledge of proper use and storage of portable power tools.
WM.03.05	Demonstrate and explain knowledge of proper use and storage of basic hand tools.
WM.03.14	Select appropriate tools, procedures, and/or equipment.

### **Unit Essential Questions**

- How do you safely use hand tools and/or power tools to create a final product?
- Why is it important to use the proper tool for the job?

### **Unit Focus Questions**

- How do you determine which is the proper tool for the job?
- Why is it important to store hand and/or power tools correctly?

### **Unit Scope and Sequence**

- Screw driver
- Hammer
- Cordless screw gun/drill
- Hand sander
- Jigsaw
- Circular Saw

### **Unit Assured Assessments**

Summative Assessments:

- Safety quizzes for hand tools and hand held power tools

### **Resources**

#### Core

- Safety worksheets

#### Supplemental

- [Power Tool Institute Circular Saw Safety](#)
- [Power Tool Institute Español - Seguridad con la Sierra Circular](#)

### **Key Vocabulary**

- Crosscutting
- Ripping
- Hardwoods, softwoods
- Wood Grain
- Sandpaper Grit
- Mitre Cuts
- Torx bit
- Phillips bit
- Drill chuck

### **Time Allotment**

Approximately 1 Week

## UNIT 4

### Woodworking Machinery

#### Unit Goals

At the completion of this unit, students will:

<b>WM.03</b>	<b>Identify and describe the safe and appropriate use of various types of hand and power tools and machinery used for building.</b>
WM.03.07	Identify proper use and function of stationary saws.
WM.03.08	Identify the proper use and function specialty machinery (e.g. drill presses, jointers, surface planers, table saws, power miter saws, band saws, scroll saws, and stationary sanders).
WM.03.09	Identify proper use and function of the table and miter saws.
WM.03.10	Explain and demonstrate correct use of planers.
WM.03.14	Select appropriate tools, procedures, and/or equipment.

#### Unit Essential Questions

- How do woodworking machines better facilitate construction?

#### Unit Focus Questions

- How do you determine which is the proper tool for the job?
- Why is it important to properly maintain woodworking machines?
- Why is it important to pay attention when using woodworking machinery?

#### Unit Scope and Sequence

- Compound Miter Saw
- Jointer
- Surface Planer
- Table Saw
- Band Saw
- Scroll Saw
- Drill Press

#### Unit Assured Assessments

Summative Assessments:

- Cell Phone Holder

## Resources

### Core

- Cell Phone Holder Plans (see appendix)
- Machine Safety Handouts
- Wood Technology I Project Rubric & Reflection (see appendix)

### Supplemental

- [Power Tool Institute Miter Saw Safety](#)
- [Power Tool Institute Español - Seguridad Para la Sierra de Inglete](#)
- [Power Tool Institute Table Saw Safety](#)
- [Power Tool Institute Español - La Mesa Vio La Seguridad](#)

## Key Vocabulary

- Crosscutting
- Ripping/resawing
- Anti-kickback pawls
- Fence
- Relief cuts
- Tangent Cuts
- Jointing
- Planing
- Dado
- Rabbet
- RPMs
- Mitre Cuts
- Minimum cutting radius
- Twist bits
- Forstner bits
- Hole saw
- Spade bit

## Time Allotment

Approximately 3 Weeks

**UNIT 5**  
Construction Technique

**Unit Goals**

At the completion of this unit, students will:

<b>WM.04</b>	<b>Explain and be able to demonstrate the methods involved in turning raw materials into useable products.</b>
WM.04.01	Describe and interpret technical drawings.
WM.04.04	Interpret a design to facilitate replication
WM.04.10	Prepare stock for use.
WM.04.11	Consider the natural characteristics of grain, knots, and checks when laying out a board.
WM.04.13	Identify and select the proper cutting process based on grain direction.
WM.04.14	Identify characteristics and applications of the following deciduous hardwoods: oak, maple, and poplar.
WM.04.19	Identify and describe the purpose and use of the following woodworking fasteners: common nails, round head screws, flat head screws, and oval head screws.
WM.04.20	Identify, describe purpose of and use woodworking adhesives.
WM.04.21	Identify and describe the purpose of the following clamping devices: bar clamp, c-clamp, parallel/hand screw clamp, and spring clamps.
WM.04.22	Identify and apply various wood finishes for interior and exterior, with brush or wipe on, for the following: paint, stain, and clear coat.
WM.04.23	Describe the abrasive grit numbering grading system.



### **Unit Essential Questions**

- What is the process for taking raw materials and plans to create a finished product?
- What are the important decisions a woodworker needs to make when creating a finished product?

### **Unit Focus Questions**

- Why is it important to follow a project plan?
- How do you prepare stock for use in a project?
- Why is it important to check lumber before use?
- What is the process of assembling a project?
- How do you properly finish a project?

### **Unit Scope and Sequence**

- Plan reading and interpretation
- Stock preparation and examination
- Gluing and clamping
- Assembling techniques
- Finishing techniques

### **Unit Assured Assessments**

Summative Assessments:

- Step Stool Project

Formative Assessments:

- Plan reading quiz

### **Resources**

#### Core

- Step Stool Plans (see appendix)
- Plan reading quiz
- Wood Technology I Project Rubric & Reflection (see appendix)

#### Supplemental

- “The Bird House” handout (see appendix)

### **Key Vocabulary**

- Cupping
- Warps
- Checks
- Adhesion
- Bar clamp
- F clamp
- C clamp

- Pipe clamp
- Pocket holes

### **Time Allotment**

Approximately 8 Weeks

## **UNIT 6** Student Projects

### **Unit Goals**

At the completion of this unit, students will:

<b>WM.04</b>	<b>Explain and be able to demonstrate the methods involved in turning raw materials into useable products.</b>
WM.04.02	Describe and prepare rough drawings and sketches.
WM.04.03	Explain and prepare a cut list or bill of material from a basic plan and assembly drawing.
WM.04.07	Extrapolate information from a set of plans.
WM.04.12	Identify and assemble the following types of joints: butt, miter, dado, rabbet, and lap.

### **Unit Essential Questions**

- How do plans help you create a woodworking project?
- Why is it important to follow a set of plans when creating a final product?

### **Unit Focus Questions**

- Why is it important to begin with a cut list?
- Why is it important to work in a particular sequence?
- Why are some woodworking joints better than others for a particular project?

### **Unit Scope and Sequence**

- Project selection
- Plan interpretation
- Cut list
- Stock preparation

- Construction techniques
- Finishing techniques

### **Unit Assured Assessments**

Summative Assessments:

- Final Student Project

Formative Assessments:

- Teacher Check-ins
- Student Project Build Worksheet

### **Resources**

#### Core

- Student Project Plan
- Student Project Build Worksheet (see appendix)
- Wood Technology 1 Project Rubric & Reflection (see appendix)

#### **Key Vocabulary**

- Cut list
- Board foot
- Rabbet joint
- Butt joint
- Mitre joint

#### **Time Allotment**

Approximately 6 Weeks

## CREDIT

One-half credit in CTE

## CURRENT REFERENCES

- Umstatt, William D., and Charles W. Davis. *Modern Cabinetmaking*. Tinley Park, IL, Goodheart-Willcox, 2000.

## ASSURED STUDENT PERFORMANCE RUBRICS

- Trumbull High School School-Wide Problem Solving Through Critical Thinking Rubric
- Trumbull High School School-Wide Social and Civic Expectations Rubric
- Trumbull High School School-Wide Independent Learning and Thinking Rubric
- Wood Technology I Project Rubric

## OTHER RESOURCES

- [Phone Holder Project](#)
- [Step Stool Project](#)
- Student Projects
  - [Mail & Key Organizer](#)
  - [Shaker Style Coat & Mitten Rack](#)
  - [Nesting Trays](#)
  - [Collectibles Shelf](#)
  - [Bedside Table](#)
- Safety Videos
  - [Power Tool Safety — It's In Your Hands](#)
  - [La Seguridad de la Herramienta Eléctrica - Está En Sus Manos](#)
  - [Power Tool Institute Circular Saw Safety](#)
  - [Power Tool Institute Español - Seguridad con la Sierra Circular](#)
  - [Power Tool Institute Miter Saw Safety](#)
  - [Power Tool Institute Español - Seguridad Para la Sierra de Inglete](#)
  - [Power Tool Institute Table Saw Safety](#)
  - [Power Tool Institute Español - La Mesa Vio La Seguridad](#)
- [The Ruler Game](#)

# Wood Technology 1

Criteria	Excellent (4)	Good (3)	Satisfactory (2)	Needs Improvement (1)	Student Grade	Teacher Grade
<b>Planning and Layout</b>	Students demonstrate basic planning and layout skills, but some inefficiencies in material usage and layout may be present.	Students demonstrate effective planning and accurate layout, resulting in efficient material usage.	Demonstrates basic planning and layout skill, but some	Student's planning and layout show significant inefficiencies, leading to wastage of materials.		
<b>Cutting pieces and preparing stock</b>	All faces and edges have been planed, joined and sanded if needed. All parts are a consistent thickness.	All faces and edges have been planed, joined and sanded if needed. All parts are a consistent thickness.	Some faces and edges have been prepared properly, some have not. Table saw marks are visible. Parts are of various thicknesses.	Wood had not been prepared thoroughly. It has not been planed correctly. Edges were not joined. Parts are of various thicknesses.		
<b>Fastening</b>	Nails and screws are not visible. They have been properly plugged or filled. There is symmetry in the layout of fasteners. Joints are tight. Wood grain on plug is in line with grain on Project	Nails and screws are not visible. They have been mostly plugged or filled. There is symmetry in the layout of fasteners. Wood grain on plugs is in line with grain on project. Joints are mostly tight.	Nails and screw were not properly used. They are not plugged or filled well. Some holes were not filled or plugged at all. Joints could be tighter	Nails and screw were not properly used. They are not plugged or filled. Nail and screw hole patterns are random and haphazard. Joints are not tight.		
<b>Gluing</b>	All joints are glued properly & sufficiently. There are no visible glue marks.	Joints seem strong. Very small glue marks and stains can be seen	Some glue is visible. Joints are not strong and were not glued properly.	Joints are loose or not glued at all. Glue marks and stains are visible everywhere.		
<b>Sanding</b>	Everything was sanded perfectly	Project was sanded sufficiently.	Some sanding was done but not enough.	Project was not sanded sufficiently.		

<b>Finishing</b>	Finish is smooth and consistent. There are little to no imperfections. There are no drips or missed spots.	Very few imperfections. Stain is consistent. Very few drips. Finish is smooth to the touch.	There are few imperfections. Stain is not consistent throughout. Some drips are visible.	There are imperfections everywhere. Finish was applied haphazardly. Stain appears blotchy. There are multiple drip marks.		
<b>Craftsmanship</b>	Construction is very solid, symmetrical and square. Every- thing lines up and the moving parts are functional.	Construction is solid, and mostly square. Most components line up. Moving parts are tight	Not very solid. Out of square in places. Parts don't line up. Symmetry is off. Moving parts are tight.	Construction is poor. Nothing lines up. There is no symmetry. Nothing is square. Joints are not solid.		

<b>Name:</b>	<b>Period:</b>	<b>Grade:</b>
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## Wood Technology I Project Feedback

Period/Level: \_\_\_\_\_ Project: \_\_\_\_\_ Prepared by: \_\_\_\_\_

<b>Describe Project:</b>	<b>How long did it take to complete the project?</b>

	Student Comments	Teacher Comments	Grade
<b>Planning and Layout</b> (Take into account research and measuring)			Possible 20 points
<b>Cutting pieces and preparing stock</b>			Possible 20 points
<b>Fastening and Gluing</b> (Take into account accuracy and neatness)			Possible 20 points
<b>Sanding and Finishing</b> (Take into account staining and sanding)			Possible 20 points
<b>Craftsmanship</b> (Overall look of project)			Possible 20 points

Final Grade: \_\_\_\_\_

### Wood Technology I Project Build Worksheet

Name:		Class Period:
Project:		
Project Description:		
Approximate finished size of project:		Finishing Options
Height:	Paint/Color	
Width:	Other	
Depth:		
Sketch of finish Project:		
Required Materials:		
Wood/Type:		
Misc. Materials:		
Required Tools:		



Steps to Build Project:

Include Machines, sizes, and important information

# Wood Technology 1

## Project Reflection

Name:

Project Name:

### Self Reflection

What is the most important thing you learned in this project:

What do you wish you had spent more time on or done differently:

What part to the project did you do your best work on:

### Project Reflection

What was the most enjoyable part of this project and why:

What was the least enjoyable part of this project and why:

How could your teacher change this project to make it better next time: