



# 8th Grade Industrial Technology Curriculum

Board Approved: March 21, 2024

## Course Information

**Course Description:**

This course introduces students to foundational knowledge and skills used in the construction and manufacturing industries. Students will learn how to apply concepts in hand tools, power tools, design, measuring, and problem solving to safely and accurately complete increasingly complex woodworking projects. Students will apply mathematical and engineering concepts through product testing and evaluation.

**Transfer Goal:**

Develop a complex design for specific woodworking projects, safely and accurately using both hand and power tools to create the project according to specifications.

**State Industrial Tech Standards:** [DESE Career Pathways for Construction Trades](#)

**Curriculum Resource(s):** *Exploring Woodworking, 8th Edition*

*Priority standards indicated in **bold***

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Patrons with questions about the course should contact [curriculum@fhsdschools.org](mailto:curriculum@fhsdschools.org)

# Unit 1: Foundations of Industrial Technology

**Timeframe: 3 weeks, ongoing throughout course**

**Unit Description:** Students will learn measuring using a standard ruler, hand tool names and uses, power tool names and uses, basic joinery and basic shop safety rules. Students will take and pass a safety test during this unit, which is a requirement to begin to use the shop tools and equipment.

## **Enduring Understandings:**

- Measuring using various tools is an important skill in accurately creating woodworking projects.
- Knowing the name of basic hand tools and the proper use of each is important when building projects.
- There are advantages and disadvantages of power tools compared to hand tools.
- Safety is the main priority in the shop and there could be negative consequences to breaking safety rules.
- Knowing what type of lumber is used and what type of tree it comes from builds an appreciation of the materials used.

## **Essential Questions:**

- How could being able to measure accurately with various measuring tools impact my finished project?
- What tools would be appropriate to use on my project?
- What tools could I use around my own home in the future?
- What are the advantages and disadvantages of using power tools instead of hand tools to build a project?
- Why is it important to know and understand safety procedures in the shop area?
- How can knowing and understanding safety procedures and techniques help me stay safe in other settings besides the woodshop?
- Why is knowing about different types of lumber and engineered materials important?

*Priority standards indicated in **bold***

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## Unit 1 Standards

<b>STANDARD CODE</b>	<b>STUDENTS WILL KNOW, BE ABLE TO, AND UNDERSTAND:</b>
<b>BS 1</b>	<b>I can explain the idea of a safety culture and its importance in the construction crafts</b>
<b>Math 2</b>	<b>I can use a standard ruler and a measuring tape to measure</b>
<b>HT 1</b>	<b>I can recognize and identify some of the basic hand tools and their proper uses in the construction trade</b>
<b>Drawing 4</b>	<b>Interpret and use drawing dimensions</b>
Comm 1	I can interpret information and instructions presented in both verbal and written form
BS 2	I can identify causes of accident and impact of accident costs
Emp 1	I can explain the role of an employee in the construction industry
Emp 2	I can demonstrate critical thinking skills and the ability to solve problems using those skills

*Priority standards indicated in **bold***

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# Unit 2: Design and Creation of a Complex Project

Timeframe: 8-9 weeks

**Unit Description:** Students will apply skills in hand tool use, power tool use, measuring and following directions to build a woodworking project using multiple wood pieces and introductory wood joinery techniques while practicing safe tool techniques. Additional enrichment and extension activities and projects may be offered as time allows.

**Enduring Understandings:**

- Proper tool techniques result in high-quality projects made safely.
- Making mistakes and finding a solution to them is an essential part of the building process.
- Being able to follow multi-step directions in a project is important to proper completion.
- Various joinery techniques can be used in the completion of complex projects.

**Essential Questions:**

- Why is using the correct tool for its intended purpose important?
- How can using the correct tool, in the correct manner, improve both your finished project and your overall safety?
- How can I overcome flaws in my lumber, project, or my own mistakes?
- How is my project affected if I skip a step or don't thoroughly complete it?
- What would happen if I built a project without having a plan first?
- How can I join two pieces of wood together, and why would I want to?

**Unit 2 Standards**

STANDARD CODE	STUDENTS WILL KNOW, BE ABLE TO, AND UNDERSTAND:
<b>BS 1</b>	<b>I can explain the idea of a safety culture and its importance in the construction crafts</b>
<b>Math 2</b>	<b>I can use a standard ruler and a measuring tape to measure</b>
<b>HT 1</b>	<b>I can recognize and identify some of the basic hand tools and their proper uses in the construction trade</b>

*Priority standards indicated in bold*

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<b>HT 3</b>	<b>I can safely use hand tools</b>
<b>PT 2</b>	<b>I can use power tools safely</b>
<b>Drawing 4</b>	<b>Interpret and use drawing dimensions</b>
Comm 1	I can interpret information and instructions presented in both verbal and written form
BS 2	I can identify causes of accident and impact of accident costs
BS 10	I can demonstrate the use and care of appropriate personal protective equipment (PPE)
Comm 2	I can communicate effectively in on-the-job situations using verbal and written skills
BMFA 1	I can identify various types of building materials and their uses
BMFA 2	I can state the uses of various types of hardwoods and softwoods
BMFA 4	I can identify the safety precautions associated with building materials
Math 9	I can recognize some of the basic shapes used in the construction industry and apply basic geometry to measure them
HT 2	I can visually inspect hand tools to determine if they are safe to use
Emp 1	I can explain the role of an employee in the construction industry
Emp 2	I can demonstrate critical thinking skills and the ability to solve problems using those skills

# Unit 3: Design, Development, and Project Evaluation

Timeframe: 6 weeks

**Unit Description:** Students will apply the concepts of design, measuring, tool identification and uses, and safety to create a project that will be tested upon completion. Students will incorporate math and engineering concepts to collect and analyze data from project testing. Students will reflect upon changes that could be made to improve the project.

## Enduring Understandings:

- Understanding the factors that affect project performance will lead to a project design that tests well.
- The ability to represent ideas by drawing them on paper using multiple viewpoints is an important skill in the design of a project.
- It is important to be able to understand and meet a list of specifications.
- Proper tool techniques result in high-quality projects made safely.
- Making mistakes and finding a solution to them is an essential part of the building process.
- Being able to follow multi-step directions in a project is important to proper completion.
- Using data to evaluate the effectiveness of a finished project is important for reflection and continued improvement.

## Essential Questions:

- What factors affect the function of a project design?
- What would happen if I built a project without having a plan first?
- What will happen if my project doesn't meet the specifications on size and location of parts?
- Why is using the correct tool for its intended purpose important?
- How can using the correct tool in the correct manner improve both your finished project and your overall safety?
- How can I overcome flaws in my lumber, project, or my own mistakes?
- How is my project affected if I skip a step or don't thoroughly complete it?
- How can I use data to determine if my project was successful?
- How can I use data to decide on changes to improve my project?

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<b>Unit 3 Standards</b>	
<b>STANDARD CODE</b>	<b>STUDENTS WILL KNOW, BE ABLE TO, AND UNDERSTAND:</b>
<b>BS 1</b>	<b>I can explain the idea of a safety culture and its importance in the construction crafts</b>
<b>Math 2</b>	<b>I can use a standard ruler and a measuring tape to measure</b>
<b>HT 1</b>	<b>I can recognize and identify some of the basic hand tools and their proper uses in the construction trade</b>
<b>HT 3</b>	<b>I can safely use hand tools</b>
<b>PT 2</b>	<b>I can use power tools safely</b>
<b>Drawing 4</b>	<b>Interpret and use drawing dimensions</b>
Comm 1	I can interpret information and instructions presented in both verbal and written form
BS 2	I can identify causes of accident and impact of accident costs
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