

Technology I Curriculum Maps

Unit 1: Shop Equipment and Tools A

Unit 2: Intro to Technology

Unit 3: Technological System Components

Unit 4: Measurement Systems and Tools

Unit 5: Design Process

Grade: 9-12 Subject: Technology I	Unit 1: Shop Equipment and Tools A
Big Idea/Rationale	This unit will assist students in choice of the correct tools as they work on their project. It will also make them know and understand how these tools are still essential in industry today for the production of high end furniture.
Enduring Understanding (Mastery Objective)	<ul style="list-style-type: none"> • What is meant by, and what are the considerations which define, quality and craftsmanship? • How do we approach simple furniture design and construction in a way which displays practical thinking, while using required tools and machinery safely?
Essential Questions (Instructional Objective)	<ul style="list-style-type: none"> • What determines length, width and thickness measurements? • How do you accurately read a ruler or tape measure using fractions of an inch? • What are our common layout tools and where are they used? • What are our common cutting tools and where are they used? • How do you use the following Hand Tools safely and properly? • Tape Measure, Center Punch • How do you use the following Power Tools safely and properly? • Band Saw, Drill Press, Belt/Disc Sander, Reciprocating Drum sander • What is a relief cut and when are they required? • When should you utilize the disc sander versus the belt sander? And vice versa • How do you properly prepare your stock before you drill a hole? • How do you prevent a blow out on the drill press?
Content (Subject Matter)	<ul style="list-style-type: none"> • Lecture on safety, Tool Part ID, Teacher Demo, Student participation with each tool • Band Saw, Drill Press, Belt/Disc Sander, Reciprocating Drum sander • Tape Measure, Center Punch • Oven Tool Project
Skills/ Benchmarks (CCSS Standards)	<ul style="list-style-type: none"> • <i>{WORK.9-12.4}</i> Demonstrate occupational health and safety skills related to industry-specific activities. • <i>{WORK.9-12.9.1.12 B.3}</i> Select and utilize appropriate technology in the design and implementation of teacher-approved projects relevant to occupations and/or higher educational settings. • <i>{WORK.9-12.9.2.12 F.4}</i> Practice the safe use of tools and equipment. • <i>{WORK.9-12.9.2.12 F.5}</i> Implement safety procedures in the classroom and workplace, where appropriate.
Materials and Resources	Rulers, Tape measures, Drill Bits, Center Punch, Hammer, Band Saw, Drill Press, Belt/Disc Sander, Reciprocating Drum Sander

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Grade: 9-12 Subject: Technology I	Unit 2: Intro to Technology
Big Idea/Rationale	Technology is everywhere and extremely dynamic. It affects all of us directly, indirectly, for good and for bad.
Enduring Understanding (Mastery Objective)	<ul style="list-style-type: none"> • The transfer of a technology from one society to another can cause cultural, social, and economic changes. • Throughout history, technological advancements have been evolutionary, or the refinements of previously known technology. • The stability of a technological system is influenced by all of the components in the system.
Essential Questions (Instructional Objective)	<ul style="list-style-type: none"> • What is Technology? • What is the difference between science and technology? • What are technological systems and their parts? • How is technology a system? • What the five major components of a system? • What are the seven inputs (or resources) that go into a system? • What are the seven main types of technological systems?
Content (Subject Matter)	<ul style="list-style-type: none"> • Discussion and notes on chapter 1 of text (1/2 class period for 2 days) • Discussion and notes on chapter 2 of text (1/2 class period for 2 days) • Discussion and notes on chapter 3 of text (1/2 class period for 2 days) • Marble Counter Design Project <ul style="list-style-type: none"> ○ For the first 6 days, the students will get the last 1/2 of each period to work ○ Students, in groups of 3 or 4 must brain storm 2 ideas each ○ Sketch up each idea and present them to the group ○ The group picks their best design, be it one or a combination ○ Students draw up basic sketches to plan their prototype ○ Students build, test, redesign, build prototype ○ Students demonstrate to the class their final design
Skills/ Benchmarks (CCSS Standards)	<ul style="list-style-type: none"> • TEC.9-12.8.1.12 B.9: Create and manipulate information, independently and/or collaboratively, to solve problems and design and develop products. • TEC.9-12.8.2.12 B.3: Develop methods for creating possible solutions, modeling and testing solutions, and modifying proposed design in the solution of a technological problem using hands-on activities.
Materials and Resources	<ul style="list-style-type: none"> • Technology Text Book, Chapter 1-3 • Wood Shop Tools • Project materials - Wood, dowels, nails, screws, wax paper, manila folders, glue

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Grade: 9-12 Subject: Technology	Unit 3: Technological System Components
Big Idea/Rationale	A technological system is a group of parts and each part is important.
Enduring Understanding (Mastery Objective)	<ul style="list-style-type: none"> • Inventions and innovations are the results of specific goal-directed research. • The stability of a technological system is influenced by all of the components in the system.
Essential Questions (Instructional Objective)	<ul style="list-style-type: none"> • What are the seven inputs (or resources) that go into a system? • Name an example for each system input. • How are the three major processes in a system related to each other? • What are the steps of the problem solving process? • What is the definition of feedback, when used in a technological system?
Content (Subject Matter)	<ul style="list-style-type: none"> • Discussion and notes on chapter 4 of text (1/2 class period for 2 days) • Discussion and notes on chapter 5 of text (1/2 class period for 2 days) • Discussion and notes on chapter 6 of text (1/2 class period for 2 days) • Small Rocket Build and Launch <ul style="list-style-type: none"> ○ For the first 6 days, the students will get the last 1/2 of each period to work ○ Students work individually to build their rockets ○ Students plan their paint design ○ Students pain their rockets ○ Students launch and recover their rockets ○ Students will keep track of the 7 resources that go into the project as well as the other 4 parts of the system on a rocket system worksheet.
Skills/ Benchmarks (CCSS Standards)	TEC.9-12.8.2.12.F.1 - [Cumulative Progress Indicator] - Determine and use the appropriate application of resources in the design, development, and creation of a technological product or SYSTEM.
Materials and Resources	<ul style="list-style-type: none"> • Technology Text Book, Chapter 4-6 • Wood Shop paint booth • Project materials - spray paint, tacky glue, rocket kits, masking tape, engines, launch pad and ignition control panel.
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Grade: 9-12 Subject: Technology I	Unit 4: Measurement Systems and Tools
Big Idea/Rationale	To describe something to someone, we must have a common reference or standard. We use measurement to describe objectively the physical qualities of an object.
Enduring Understanding (Mastery Objective)	<ul style="list-style-type: none"> • What are the advantages and disadvantages of the SI metric system to the US Customary system. • Without precision measurements, complex items like automobiles, cell phones, and computer could not be constructed.
Essential Questions (Instructional Objective)	<ul style="list-style-type: none"> • What is the definition of measurement? • What are the major physical qualities that can be measured? • What are 10 common measuring tools and identify what they can measure?
Content (Subject Matter)	<ul style="list-style-type: none"> • Discussion and notes on chapter 8 of text (1/2 class period for 2 days) • Peg Board Project • For the first 2 days, the students will get the last 1/2 of each period to work <ul style="list-style-type: none"> ○ Students work individually to layout their peg board using the following ○ Ruler and Pencil and Drawing requirements ○ Students shape the board into a triangle ○ Students locate all 15 holes and drill them out ○ Students stain and polyurethane peg boards
Skills/ Benchmarks (CCSS Standards)	<i>{WORK.9-12.9.2.12 F.4}</i> Practice the safe use of tools and equipment.
Materials and Resources	<ul style="list-style-type: none"> • Technology Text Book, Chapter 8 • Wood Shop paint booth, drill press, sanders, and band saw • Project materials - Wood, pencil, ruler, and sand paper
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Grade: 9-12 Subject: Technology I	Unit 5: Design Process
Big Idea/Rationale	Taking an idea you have and transferring it from a concept to a sketch, to working drawings, to models, and then to a working prototype is the typical sequence taken in the design process.
Enduring Understanding (Mastery Objective)	<ul style="list-style-type: none"> • Brainstorming and sketching possible solutions to an existing design problem is common when designing new products. • Students will produce isometric view and multi-view drawings of simple geometric solids in order to produce industry quality fabrication documents. • Measure and Fabricate parts for a functional prototype from the fabrication drawings.
Essential Questions (Instructional Objective)	<ul style="list-style-type: none"> • Have you ever looked at a product and wonder how did the designer think of that idea? • What is involved in the creation of a product? • Why is it so important for a designer to think of as many solutions to a design problem as possible? • What happens to the level of detail and accuracy if you need to communicate your ideas (drawings) to someone else who is responsible for building the prototype?
Content (Subject Matter)	Day 1: <ul style="list-style-type: none"> • Present Concepts, Key Terms, and Essential Questions to provide a lesson overview. • Distribute and introduce project - Puzzle Design Challenge • Discuss constraints, requirements and questions about the project. • Review the design process using Example Design Processes. Day 2: <ul style="list-style-type: none"> • Distribute Isometric Graph Paper and discuss isometric drawing • Students use small blocks to create 3, 4, 5, and 6 cube drawings. Day 3-15: <ul style="list-style-type: none"> • Review Puzzle Design Challenge • Students complete 3, 4, 5, and 6 cube drawings. • Students use cube drawings to design a cube puzzle that is created by putting 5 different Puzzle pieces. • Students create a prototype using 27 small wooden blocks and glue. • Students color blocks and create an isometric and 3 View drawing for each piece. • Students create a puzzle solution in isometric form with Bill of Material.

Skills/ Benchmarks (CCSS Standards)	<p>{TEC.9-12.8.2.12 B.3} Develop methods for creating possible solutions, modeling and testing solutions, and modifying proposed design in the solution of a technological problem using hands-on activities.</p> <p>{WORK.9-12.9.1.12 B.3} Select and utilize appropriate technology in the design and implementation of teacher-approved projects relevant to occupations and/or higher educational settings.</p> <p>{TEC.9-12.} The design process is a systematic approach to solving problems.</p>
Materials and Resources	<p>Isometric Drawing paper, Pencils, Erasers, Rulers, 27 Wooden Cubes (3/4 x 3/4 x 3/4") per each student, Permanent markers (6 colors), colored pencils, wood glue</p>
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