

Construction III Curriculum Maps

Unit 1: Shop Safety

Unit 2: Shop Equipment and Tool Review

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Unit 5: Footings and Foundations

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Unit 8: Roof Framing and Sheathing

Unit 9: Roofing and Exterior Trim

Unit 10: Siding and Exterior Trim

Unit 11: Project 2

Grade: 10-12 Subject: Construction III	Unit 1: Shop Safety
Big Idea/Rationale	All students will demonstrate safe life skills in order to be functional members of society.
Enduring Understanding (Mastery Objective)	Lack of awareness about laws and rules may lead to unsafe situations and chaos.
Essential Questions (Instructional Objective)	<ul style="list-style-type: none"> • How is safety a personal and societal responsibility? • What causes accidents in the wood shop environment? • What safety equipment and attire should be worn in the wood shop? • What are the safety rules for working with tools and power tools? • What conditions in the shop could be considered hazardous?
Content (Subject Matter)	<ul style="list-style-type: none"> • Class Discussion, Shop tour and demonstration, and worksheets on: • Workshop safety • Tools and materials safety • Power tools safety • Hazardous materials safety
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.4.i}</i> Safety • <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	<ul style="list-style-type: none"> • Handouts • Worksheets • Safety Test
Notes	

Grade: 10-12 Subject: Construction III	Unit 2: Shop Equipment and Tool Review
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)	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 are our common layout tools and where are they used? • What are our common planing tools and where are they used? • What are our common cutting tools and where are they used? • What are common driving tools and what is their use? • What is the most appropriate machine to use under different applications? • How do I assure myself of using all machines safely? • What are all details of safety and machine use as they pertain to all of our available machinery? • What can we further do with our machinery and knowledge to take our project to the next level of difficulty? • How do I (student) better understand the make-up, maintenance and broader diversity of each machine?
Content (Subject Matter)	<ul style="list-style-type: none"> • Review machinery with additional information: <ul style="list-style-type: none"> ○ Miter Saw ○ Planer ○ Portable Power tools ○ Table saws ○ Sanders ○ Drill press ○ Band Saw • Push Tool Project
Skills/ Benchmarks (CCSS Standards)	<ul style="list-style-type: none"> • {WORK.9-12.4} Demonstrate occupational health and safety skills related to industry-specific activities. • {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. • {WORK.9-12.9.2.12 F.4} Practice the safe use of tools and equipment. • {WORK.9-12.9.2.12 F.5} Implement safety procedures in the classroom and workplace, where appropriate.
Materials and	<ul style="list-style-type: none"> • Tape Measure, Try Square, Sand Paper, Vise, Quick Clamps

Resources	<ul style="list-style-type: none">• Band Saw, Belt Disc Sander, Drill Press, Recip Drum sander• Miter Guide, Heavy Duty Wood Clamps, Wood Chisel, Hammer• Lathe, Portable Belt Sander, Scroll Saw, Hand Drill• Planer, Miter Saw, Table Saw, Palm Sander• Wood Glue, Wood Stain, Polyurethane
Notes	

Grade: 10-12 Subject: Construction III	Unit 3: Project 1
Big Idea/Rationale	To refresh and extend students knowledge of the equipment needed to successfully complete a piece of furniture satisfactorily to highest standards and most important use this equipment safely and proficiently.
Enduring Understanding (Mastery Objective)	<ul style="list-style-type: none"> • Students will have a greater understanding of plan development including a wider use of joinery, selecting their own lumber and doing an accurate assessment of layout and plan. • 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 are our common layout tools and where are they used? • What are our common planing tools and where are they used? • What are our common cutting tools and where are they used? • What are common driving tools and what is their use? • What is the most appropriate machine to use under different applications? • How do I assure myself of using all machines safely? • How has modern technology improved machinery and the quality of results? • How do we identify a piece of furniture that meets our needs, is constructed of proper materials, as well as a premium joinery. • What areas do I need to assure project fastening and joinery are at a premium level.
Content (Subject Matter)	<ul style="list-style-type: none"> • Students to select a intermediate Woodworking Project and follow the plans from start to finish. Project must take approximately 7 weeks to complete to assure that they will be done on time. • Plan reading (review) • Preparing cut list • Selecting lumber • Finalizing Bill of materials • Cutting and Shaping of parts • Assembly of parts • Sanding and Finishing
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.

	<ul style="list-style-type: none"> • <i>{WORK.9-12.9.2.12 F.5}</i> Implement safety procedures in the classroom and workplace, where appropriate.
Materials and Resources	<ul style="list-style-type: none"> • Tape Measure, Try Square, Sand Paper, Vise, Quick Clamps • Band Saw, Belt Disc Sander, Drill Press, Recipe Drum sander • Miter Guide, Heavy Duty Wood Clamps, Wood Chisel, Hammer • Lathe, Portable Belt Sander, Scroll Saw, Hand Drill • Planer, Miter Saw, Table Saw, Palm Sander • Wood Glue, Wood Stain, Polyurethane
Notes	<ul style="list-style-type: none"> • Wood Magazine Plans for each student to choose from

Grade: 10-12 Subject: Construction III	Unit 4: Building Plans and Materials
Big Idea/Rationale	To introduce the proper carpentry terminology to the students and give them an understanding of how to interpret architectural drawings.
Enduring Understanding (Mastery Objective)	<ul style="list-style-type: none"> • There is a difference between construction lumber and it is important to use the correct type in order to meet building code and keep costs down. • How do we approach construction in a way which displays practical thinking and planning?
Essential Questions (Instructional Objective)	<ul style="list-style-type: none"> • What is the difference between hardwood and softwood? • What are the actual dimensions of a 2 x 4? • What equations and terms are needed to order lumber for a construction job? • How are nails sized and identified? • What are the most common metal framing connectors and where are they used? • What elements are critical in a set of house plans? • Why are architectural drawings drawn to scale? • What is a Floor Plan? • What is a Foundation Plan? • What is a Plot Plan?
Content (Subject Matter)	<ul style="list-style-type: none"> • Class discussion on types of lumber, difference between hardwood and softwood, Lumber defects, calculating board feet, and plywood. <ul style="list-style-type: none"> ○ Samples: <ul style="list-style-type: none"> ▪ 2x4 and 2x6 ▪ Knot defects ▪ Crook, Twist, and Bowed boards ▪ Plywood, 1/2", 3/4", and Hi-grade Plywood ▪ Pressure treated lumber ▪ Metal connectors ▪ 8d, 12d, 16d common and galvanized nails ▪ Screws, Roofing and finishing nails ▪ Worksheets on calculating board feet and linear feet of lumber. • Class discussion on architectural drawings, blue prints, and other plans. <ul style="list-style-type: none"> ○ Samples: <ul style="list-style-type: none"> ▪ Floor plans ▪ Foundation plans ▪ Elevations ▪ Site and roof plans ▪ Framing plans • Worksheet on reading plans and identifying information from the plan

	<ul style="list-style-type: none"> • Class project, Sketch a 1-Story Floor Plan of your Dreams
Skills/ Benchmarks (CCSS Standards)	<ul style="list-style-type: none"> • {WORK.9-12.4} Demonstrate occupational health and safety skills related to industry-specific activities. • {WORK.9-12.9.2.12 B.2} Apply project planning and management skills in academic and/or occupational settings. • {WORK.9-12.9.2.12 F.4} Practice the safe use of tools and equipment. • {WORK.9-12.1} Participate in a structured learning experience that demonstrates interpersonal communication, teamwork, and leadership skills.
Materials and Resources	<ul style="list-style-type: none"> • Section 1, Modern Carpentry Text book, Goodheart-Willcox • Section 3, Modern Carpentry Text book, Goodheart-Willcox • Different types of wood and building materials • A set of building plans
Notes	

Grade: 10-12 Subject: Construction III	Unit 5: Footings and Foundations
Big Idea/Rationale	Anyone working in the carpentry trade needs a working knowledge of standards and practices in concrete work.
Enduring Understanding (Mastery Objective)	<ul style="list-style-type: none"> • Students will form cement • Students will distinguish between cement, concrete, and aggregate
Essential Questions (Instructional Objective)	<ul style="list-style-type: none"> • What are the typical excavation procedures? • How do you build a concrete form? • What is Cement? • What is Concrete? • What is Aggregate? • What are the common types of foundation systems used in residential buildings?
Content (Subject Matter)	<ul style="list-style-type: none"> • Text discussion • Laying out Building Lines • Excavation • Foundation Systems • Forms for Footings • Concrete • Anchors • Foundations Video • Concrete Block Activity • Students will be given the dimensions of a needed concrete block. They are to build a form out of plywood to create this concrete block. They will be graded on how close to the final dimensions the block is and how square each corner is.
Skills/ Benchmarks (CCSS Standards)	<ul style="list-style-type: none"> • {WORK.9-12.4} Demonstrate occupational health and safety skills related to industry-specific activities. • {WORK.9-12.9.2.12 B.2} Apply project planning and management skills in academic and/or occupational settings. • {WORK.9-12.9.2.12 F.4} Practice the safe use of tools and equipment. • {WORK.9-12.1} Participate in a structured learning experience that demonstrates interpersonal communication, teamwork, and leadership skills.
Materials and Resources	<ul style="list-style-type: none"> • Chapter 7, Modern Carpentry Text book, Goodheart-Willcox • Plywood, drywall screws, tape measure, table saw, try square • Concrete, water, mixing tray, trough, shovel, hoe • Foundations Video and Worksheet

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Grade: 10-12 Subject: Construction III	Unit 6: Floor Framing
Big Idea/Rationale	Proper floor framing will lead to a stronger, well erected building.
Enduring Understanding (Mastery Objective)	<ul style="list-style-type: none"> • Students will use the appropriate lumber to frame a floor. • Students will be able to tell the main parts of a floor frame.
Essential Questions (Instructional Objective)	<ul style="list-style-type: none"> • What are the main parts of a floor frame? • What is the common joist spacing floor framing? • What type of lumber should a sill be made of? • What types of materials are used for subfloors?
Content (Subject Matter)	<ul style="list-style-type: none"> • Text discussion • Types of Framing • Girders and Beams • Sill Construction • Joists • Subfloors • Metal Hangers • Video - Floor Framing • Drawing Portfolio - Draw the Sill and Floor framing design • Kid's Play House - Build the Floor
Skills/ Benchmarks (CCSS Standards)	<ul style="list-style-type: none"> • {WORK.9-12.4} Demonstrate occupational health and safety skills related to industry-specific activities. • {WORK.9-12.9.2.12 B.2} Apply project planning and management skills in academic and/or occupational settings. • {WORK.9-12.9.2.12 F.4} Practice the safe use of tools and equipment. • {WORK.9-12.1} Participate in a structured learning experience that demonstrates interpersonal communication, teamwork, and leadership skills.
Materials and Resources	<ul style="list-style-type: none"> • Chapter 8, Modern Carpentry Text book, Goodheart-Willcox • 2x4, 2x6, joist hangers, nails • Hammers, Tape Measure, Try Square, Level
Notes	

Grade: 10-12 Subject: Construction III	Unit 7: Walls Framing
Big Idea/Rationale	Wall framing includes assembling of vertical and horizontal members that form the walls of a structure.
Enduring Understanding (Mastery Objective)	<ul style="list-style-type: none"> • Students will discuss the main parts of a wall frame • Students will demonstrate the appropriate stud spacing in wall framing
Essential Questions (Instructional Objective)	<ul style="list-style-type: none"> • What are the main parts of a wall frame? • What is the coming stud spacing in wall framing? • Why do corners have to be framed differently?
Content (Subject Matter)	<ul style="list-style-type: none"> • Text discussion • Parts of the wall frame • Plate Layout • Erecting Wall Sections • Double Plate • Wall Sheathing • Video - Wall Framing • Drawing Portfolio - Draw each wall for the playhouse • Kid's Play House - Frame all four walls
Skills/ Benchmarks (CCSS Standards)	<ul style="list-style-type: none"> • {WORK.9-12.4} Demonstrate occupational health and safety skills related to industry-specific activities. • {WORK.9-12.9.2.12 B.2} Apply project planning and management skills in academic and/or occupational settings. • {WORK.9-12.9.2.12 F.4} Practice the safe use of tools and equipment. • {WORK.9-12.1} Participate in a structured learning experience that demonstrates interpersonal communication, teamwork, and leadership skills.
Materials and Resources	<ul style="list-style-type: none"> • Chapter 9, Modern Carpentry Text book, Goodheart-Willcox • 2x4, 2x6, nails • Hammers, Tape Measure, Try Square, Level • Miter Saw
Notes	

Grade: 10-12 Subject: Construction III	Unit 8: Roof Framing and Sheathing
Big Idea/Rationale	Roof framing provides a base for the roofing materials, must be strong and rigid, and can contribute to the decorative features of a structure.
Enduring Understanding (Mastery Objective)	<ul style="list-style-type: none"> • Students will discuss the common roof types • Students will discuss the main parts of a common rafter • Students will demonstrate proper sheathing techniques
Essential Questions (Instructional Objective)	<ul style="list-style-type: none"> • What are two common roof types? • What are the main parts of a common rafter? • Why is slope and pitch important? • What are proper sheathing techniques?
Content (Subject Matter)	<ul style="list-style-type: none"> • Text discussion • Roof Types • Parts of a Roof Frame • Laying out Common Rafters • Erecting a Gable Roof • Gable End Frame • Sheathing • Video - Roof Framing • Drawing Portfolio - Draw the Rafter design • Kid's Play House - Frame the Roof and Sheath the walls and roof.
Skills/ Benchmarks (CCSS Standards)	<ul style="list-style-type: none"> • {WORK.9-12.4} Demonstrate occupational health and safety skills related to industry-specific activities. • {WORK.9-12.9.2.12 B.2} Apply project planning and management skills in academic and/or occupational settings. • {WORK.9-12.9.2.12 F.4} Practice the safe use of tools and equipment. • {WORK.9-12.1} Participate in a structured learning experience that demonstrates interpersonal communication, teamwork, and leadership skills.
Materials and Resources	<ul style="list-style-type: none"> • Chapter 10, Modern Carpentry Text book, Goodheart-Willcox • 2x4, 2x6, Rafter hangers, nails • Hammers, Tape Measure, Try Square, Level • Miter Saw
Notes	

Grade: 10-12 Subject: Construction III	Unit 9: Roofing and Exterior Trim
Big Idea/Rationale	Roofing materials protect the structure and its contents from the sun, rain, snow, wind, and dust. It also contributes to the appearance of the structure.
Enduring Understanding (Mastery Objective)	<ul style="list-style-type: none"> • Students will install roofing felt • Students will demonstrate correct nailing patterns when installing shingles
Essential Questions (Instructional Objective)	<ul style="list-style-type: none"> • How many square feet does a square of shingles cover? • How do you install roofing felt? • What is the correct nailing pattern when installing shingles? • When shingling, do you start at the ridge or the eave?
Content (Subject Matter)	<ul style="list-style-type: none"> • Text discussion • Types of Materials • Roofing Terms • Prepping the Roof Deck • Underlayment • Drip Edging • Installing Shingles • Video - Roofing materials • Kid's Play House - Install Felt, Drip Edge, and Asphalt shingles.
Skills/ Benchmarks (CCSS Standards)	<ul style="list-style-type: none"> • {WORK.9-12.4} Demonstrate occupational health and safety skills related to industry-specific activities. • {WORK.9-12.9.2.12 B.2} Apply project planning and management skills in academic and/or occupational settings. • {WORK.9-12.9.2.12 F.4} Practice the safe use of tools and equipment. • {WORK.9-12.1} Participate in a structured learning experience that demonstrates interpersonal communication, teamwork, and leadership skills.
Materials and Resources	<ul style="list-style-type: none"> • Chapter 11, Modern Carpentry Text book, Goodheart-Willcox • Shingles, Roofing Felt, Drip Edging, nails, staples • Hammers, Tape Measure, Level, Staple Guns, Utility Knives, Chalk Line
Notes	

Grade: 10-12 Subject: Construction III	Unit 10: Siding and Exterior Trim
Big Idea/Rationale	Developments in the chemical industries have resulted in economical manufacturing of vinyl siding that is rigid and durable. This siding type is the most common in home construction.
Enduring Understanding (Mastery Objective)	<ul style="list-style-type: none"> • Students will distinguish between the various types of vinyl siding components. • Students will cut vinyl siding.
Essential Questions (Instructional Objective)	<ul style="list-style-type: none"> • What are the most common siding choices and their characteristics? • List the different types of vinyl siding components • What is the best way to cut vinyl siding?
Content (Subject Matter)	<ul style="list-style-type: none"> • Text discussion • Wall Finish • Estimating Siding • Vinyl Siding components • Installing Vinyl Siding • Video - Floor Framing • Kid's Play House - Install vinyl siding
Skills/ Benchmarks (CCSS Standards)	<ul style="list-style-type: none"> • {WORK.9-12.4} Demonstrate occupational health and safety skills related to industry-specific activities. • {WORK.9-12.9.2.12 B.2} Apply project planning and management skills in academic and/or occupational settings. • {WORK.9-12.9.2.12 F.4} Practice the safe use of tools and equipment. • {WORK.9-12.1} Participate in a structured learning experience that demonstrates interpersonal communication, teamwork, and leadership skills.
Materials and Resources	<ul style="list-style-type: none"> • Chapter 13, Modern Carpentry Text book, Goodheart-Willcox • Roofing Nails, Siding, J-Channel, Starter strips, Ridge strips • Hammers, Tape Measure, Try Square, Level, Cutting Shears • Miter Saw, Band Saw
Notes	

Grade: 10-12 Subject: Construction III	Unit 11: Project 2
Big Idea/Rationale	To extend students knowledge of the equipment needed to successfully complete a piece of furniture satisfactorily to highest standards and most important use this equipment safely and proficiently.
Enduring Understanding (Mastery Objective)	<ul style="list-style-type: none"> • Students will have a greater understanding of plan development including a wider use of joinery, selecting their own lumber and doing an accurate assessment of layout and plan. • 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 are our common layout tools and where are they used? • What are our common planing tools and where are they used? • What are our common cutting tools and where are they used? • What are common driving tools and what is their use? • What is the most appropriate machine to use under different applications? • How do I assure myself of using all machines safely? • How has modern technology improved machinery and the quality of results? • How do we identify a piece of furniture that meets our needs, is constructed of proper materials, as well as a premium joinery. • What areas do I need to assure project fastening and joinery are at a premium level.
Content (Subject Matter)	<ul style="list-style-type: none"> • Students to select a Advanced Woodworking Project and follow the plans from start to finish. Project must take approximately 7 weeks to complete to assure that they will be done on time. • Plan reading (review) • Preparing cut list • Selecting lumber • Finalizing Bill of materials • Cutting and Shaping of parts • Assembly of parts • Sanding and Finishing
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.

	<ul style="list-style-type: none"> • <i>{WORK.9-12.9.2.12 F.5}</i> Implement safety procedures in the classroom and workplace, where appropriate.
Materials and Resources	<ul style="list-style-type: none"> • Tape Measure, Try Square, Sand Paper, Vise, Quick Clamps • Band Saw, Belt Disc Sander, Drill Press, Recip Drum sander • Miter Guide, Heavy Duty Wood Clamps, Wood Chisel, Hammer • Lathe, Portable Belt Sander, Scroll Saw, Hand Drill • Planer, Miter Saw, Table Saw, Palm Sander • Wood Glue, Wood Stain, Polyurethane
Notes	<ul style="list-style-type: none"> • Wood Magazine Plans for each student to choose from