



Wood Manufacturing IV: Skills for the Modern Woodworker

First Semester

Course Information

Grade(s):	11-12
Discipline/Course:	Technology Education
Course Title:	Wood Manufacturing IV: Skills for the Modern Woodworker, Semester I
Prerequisite(s):	Wood Manufacturing III: Turning the Tables (Full Year) or Wood Manufacturing III: Turning the Tables (Semester) with Teacher’s Permission
Course Description: Program of Studies	This course provides the student with an overview of wood use and advanced construction techniques. Each student will plan, design and construct an individualized project. The project builds on prior manufacturing courses and challenges the students’ abilities.
Course Essential Questions:	<ul style="list-style-type: none"> ● What does it mean to have a safe attitude? ● What causes an “accident/injury” in a workplace? ● How do you add beauty and individuality to your woodworking designs? ● What is the relationship between creativity and problem-solving? ● What advantages are gained using machines to do work? ● How do you choose the right tool or machine for specific tasks and how can you analyze the advantages and disadvantages of each type? ● How do you turn raw materials into usable products in woodworking? ● Why are demonstrating positive work behavior, self-discipline and integrity important to success when competing large tasks? ● What are some innovative ways to use advanced wood joints to create unique and functional furniture?
Course Enduring Understandings:	<ul style="list-style-type: none"> ● Woodworking is a complex and challenging craft that requires a deep understanding of materials, tools, and techniques. ● Safety is the most important rule in the woodshop. ● Everyone has a role to play in creating and maintaining a safe workplace. ● Woodworking joints are the foundation of strong and durable projects.

	<ul style="list-style-type: none"> ● Woodworking is a process of transformation. ● There are many different types of portable power and cutting tools available and it is important to choose the right tools for the job and learn how to use them safely and efficiently. ● Plans and technical drawings communicate the design intent of the woodworker. ● It is important to be patient and persistent when learning to work with wood. ● Specialty machinery can be used to create a variety of complex and intricate woodworking projects.
Duration/Credit:	Semester / 0.5 Credit
Course Materials/Resources:	Equipment and Consumables
FPS Course Academic Expectation(s):	UCT Using Communication (Media) Tools SE Synthesizing and Evaluating
Semester at a Glance (Units)	Unit 1: Course Introduction and General Safety (1 week) Unit 2: Project Design (1-2 Weeks) Unit 3: Machine Use (4 weeks) Unit 4: Project Construction (13 weeks)

Unit Number and Title:	Unit 1 - Course Introduction and General Safety
Duration:	1 week
Resource(s):	Equipment and consumables
Unit Overview:	Students will review safety practices and policies. This will include the safety practices for specific machinery and include the procedures related to workplace and job-site safety, personal protective equipment, machine safety, and material handling practices.
Learning Goals	
Standard(s):	CT Standards Wood Technology 2014 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, WM.02.05
Essential Question(s):	<ul style="list-style-type: none"> • What does it mean to have a safe attitude? • What causes an “accident/injury” in a workplace?
Enduring Understanding(s):	<ul style="list-style-type: none"> • Woodworking is a complex and challenging craft that requires a deep understanding of materials, tools, and techniques. • Safety is the most important rule in the woodshop. • Everyone has a role to play in creating and maintaining a safe workplace.
Learning Goal(s): Students will be able to use their learning to: (Content/ Skills)	Content: (Students will know...) <ul style="list-style-type: none"> • proper machine set up to prevent serious accidents or machine failure. • the considerations and concepts involved in creating jigs and custom push sticks to help with finger safety. • the steps taken to operate in a professional and respectful manner in a manufacturing environment.

- the elements and character traits are desirable as an apprentice woodworker/furniture maker.
- the policies and procedures for the wood working environment.

Skills: (Students will be able to...)

- assess workplace conditions with regard to safety and health.
- identify safety issues with appropriate safety standards to ensure a safe workplace/jobsite.
- describe safety practices for specific machines.
- follow OSHA, EPA and other safety regulations.
- select appropriate personal protective equipment as needed for a safe workplace/jobsite.

Unit Number and Title:	Unit 2 - Project Design
Duration:	1-2 weeks
Resource(s):	Equipment and consumables
Unit Overview:	Students will create a full scale and isometric drawings of their project including all the necessary joinery. They can choose to manually draft them or utilize one of the many CAD programs. From that they will create a stock-list that will guide them while they mill and machine their project pieces.
Learning Goals	
Standard(s):	CT Standards Wood Technology 2014 WM.04 Explain and be able to demonstrate the methods involved in turning raw materials into useable products. 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.04.09 Estimate materials quantities in both board feet and linear feet. WM.04.10 Interpret a design to facilitate replication.
Essential Question(s):	<ul style="list-style-type: none"> ● How do you add beauty and individuality to your woodworking designs? ● What is the relationship between creativity and problem-solving?
Enduring Understanding(s):	<ul style="list-style-type: none"> ● Woodworking joints are the foundation of strong and durable projects. ● Plans and technical drawings communicate the design intent of the woodworker.

<p>Learning Goal(s): <i>Students will know and will be able to use their learning to:</i> (Content/ Skills)</p>	<p>Content: (Students will know...)</p> <ul style="list-style-type: none"> ● the identity and use of the following measuring, layout, and marking tools: steel rule, tape measure, combination square, sliding “T” bevel, and compass. ● how to describe and identify fractional measurements from a basic plan and assembly drawings. ● the definition of CAD and how it can be used in creating woodworking products. ● the difference between both nominal and actual dimensions. ● how to draw and visually communicate simple geometric shapes and parts. ● the difference between board feet and linear feet. <p>Skills: (Students will be able to...)</p> <ul style="list-style-type: none"> ● demonstrate an understanding of rough drawings and sketches. ● explain and use fractional dimensions. ● identify, use and maintain measuring, layout, and marking tools. ● measure accurately to a sixteenth of an inch. ● create a full-scale drawing of their project using manual or computer aided drafting.
--	---

Unit Number and Title:	Unit 3 - Machine Use
Duration:	4 weeks
Resource(s):	Equipment and consumables
Unit Overview:	Students will continue expanding their knowledge of new tools and new techniques utilizing tools they have already learned how to use in new ways, such as table saws and routers.
Learning Goals	
Standard(s):	CT Standards Wood Technology 2014 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.03.04, WM.03.07 WM.04 Explain and be able to demonstrate the methods involved in turning raw materials into useable products. WM.04.04
Essential Question(s):	<ul style="list-style-type: none"> • What advantages are gained using machines to do work? • How do you choose the right tool or machine for specific tasks and how can you analyze the advantages and disadvantages of each type? • How do you turn raw materials into usable products in woodworking?
Enduring Understanding(s):	<ul style="list-style-type: none"> • Woodworking is a process of transformation. • There are many different types of portable power and cutting tools available and it is important to choose the right tools for the job and learn how to use them safely and efficiently.
Learning Goal(s): Students will be able to use their learning to: (Content/ Skills)	Content: (Students will know...) <ul style="list-style-type: none"> • the steps in creating fine furniture joints. • the proper use of a card scraper. • the concepts and considerations in creating specialty jigs. • the proper use of a pocket hole machine.

Skills: (Students will be able to...)

- utilize specialty machinery to fabricate all components for use in major projects.
- properly set-up and make all necessary special adjustments to machinery as indicated on plans to complete machining processes.
- utilize all portable power and cutting tools in the manufacture of student selected projects.

Unit Number and Title:	Unit 4 - Project Construction
Duration:	13 weeks
Resource(s):	Equipment and consumables
Unit Overview:	Students will explore modern construction techniques as they apply to their project and use this knowledge to construct and produce the necessary parts. They will learn how to properly make and utilize several basic wood joints with a CNC router. In the process they will continue to learn and practice setting-up and adjusting a variety of other wood manufacturing power equipment.
Standard(s):	<p>CT Standards Wood Technology 2014</p> <p>WM.04 Explain and be able to demonstrate the methods involved in turning raw materials into useable products. WM.04.01, WM.04.06</p> <p>WM.05 Identify and assemble wood joinery and install mechanical fasteners. WM.05.01, WM.05.02, WM.05.06, WM.05.07, WM.05.08, WM.05.09, WM.05.11, WM.05.13, WM.05.14, WM.05.15</p> <p>WM.07 Set-up, adjusts, and maintains a variety of wood manufacturing power equipment. WM.07.01, WM.07.03, WM.07.12, WM.07.13, WM.07., WM.07.20, WM.07.24, WM.07.35</p> <p>WM.09 Fabricate Traditional and Modern Casework (wall, base, and utility cabinets) WM.09.02, WM.09.03, WM.09.07, WM.09.08, WM.09.09, WM.09.16</p> <p>WM.11 Fabricate Furniture WM.11.01, WM.11.02, WM.11.06, WM.11.07, WM.11.08</p>
Essential Question(s):	<ul style="list-style-type: none"> ● Why are demonstrating positive work behavior, self-discipline and integrity important to success when competing large tasks? ● What are some innovative ways to use advanced wood joints to create unique and functional furniture?

Enduring Understanding(s):	<ul style="list-style-type: none"> ● It is important to be patient and persistent when learning to work with wood. ● Specialty machinery can be used to create a variety of complex and intricate woodworking projects.
Learning Goal(s): Students will be able to use their learning to: (Content/ Skills)	<p>Content: (Students will know...)</p> <ul style="list-style-type: none"> ● the process for using a CNC router to machine parts. ● the process for laminating boards for different designs. ● proper techniques for using a lathe. ● different leg types and their construction. ● drawers and runner styles and their construction. ● table construction methods. ● mortise and tenon joinery and its variations. ● different rabbet variations. <p>Skills: (Students will be able to...)</p> <ul style="list-style-type: none"> ● transfer a CAD drawing to a CNC router to create cabinet parts. ● use a CNC router to machine parts. ● laminate boards by gluing and clamping. ● identify styles of table legs. ● construct legs by laminating squared up pieces of wood. ● square up a leg block and taper cut a leg. ● turn a leg on the lathe using the standard tools and technique and/or cut a Cabriole leg on the bandsaw.(optional). ● build an overlay, lip or flush drawer. ● construct at least one type of drawer mount. ● recognize at least three tabletop styles and construct one.