

NEW MILFORD PUBLIC SCHOOLS
New Milford, Connecticut



General Woodworking

October 2012

*Approved by the Board of Education
November 13, 2012*

New Milford Board of Education

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New Milford's Mission Statement

The mission of the New Milford Public Schools, a collaborative partnership of students, educators, family and community, is to prepare each and every student to compete and excel in an ever-changing world, embrace challenges with vigor, respect and appreciate the worth of every human being, and contribute to society by providing effective instruction and dynamic curriculum, offering a wide range of valuable experiences, and inspiring students to pursue their dreams and aspirations.

General Woodworking

This course is designed to give students an in-depth experience of the woodworking trade while developing a multitude of 21st century skills. Students are immersed in a design and manufacturing environment that strengthens three-dimensional thought while utilizing advanced woodworking machines and equipment safely and efficiently. Emphasis is placed on quality of craftsmanship and understanding the consumer's needs and expectations. Students work collaboratively and independently. Skills taught and assessed promote a technologically literate citizen prepared for an ever changing society.

Pacing Guide

Unit #	Title	Weeks	Pages
1	Safety	1.5	7-9
2	Furniture Styles and Construction	2.5	10-12
3	Wood Materials Classification and Sizing	2	13-15
4	Project Planning and Cost Estimation	2	16-18
5	Jointer	4	19-21
6	Planer	4	22-24
7	Table Saw	4	25-27
8	Sliding Compound Miter Saw	4	28-31
9	Band Saw	3	32-34
10	Drill Press	3	35-37
11	Assembly and Fastening	5	38-40
12	Sanding and Finishing	3	41-43

Connecticut Technology Education Standards Key
Revised May, 2011

EKS Essential Knowledge and Skills

WM Wood Technology

New Milford Public Schools

Committee Member: Jeff Teravainen Unit 1: Safety	Course/Subject: General Woodworking Grade Levels: 10-12 # of Weeks: 1.5
Identify Desired Results	
Connecticut Technology Education Standards	
<ul style="list-style-type: none"> • WM.02: Describe and demonstrate the procedures related to workplace and job-site safety including personal protective equipment, machine safety, and material handling practices. • EKS.06: Implement personal and jobsite safety rules and regulations to maintain safe and healthful working conditions and environments. • EKS.02.07: Use personal protective equipment according to manufacturer rules and regulations. 	
Enduring Understandings Generalizations of desired understanding via essential questions (Students will understand that ...)	Essential Questions Inquiry used to explore generalizations
<ul style="list-style-type: none"> • Safety is an attitude and a state of mind. • To work safely in a workshop, one must have training in potential hazards as well as personal and machine safety equipment. • No one should ever operate a tool or machine without first having the proper training. 	<ul style="list-style-type: none"> • What does it mean to have a safe attitude? • What causes an “accident/injury” in a workplace? • How can one acquire safety education and training on tool or machine? • How should one react if an injury occurs?
Expected Performances What students should know and be able to do	
<p>Students will know the following:</p> <ul style="list-style-type: none"> • What it means to have a safe attitude and always to work with safety first in mind • The demands of utmost alertness and respect when working in potentially hazardous environments • The common potential hazards found in a woodshop • The safety colors, what they mean, and examples of their use • The general safety guidelines of a shop • Types of fires, types of fire extinguishers and how they are used • Basic electricity information and safety • Chemical safety and proper disposal • What a Material Safety Data Sheet is and how it is used <p>Students will be able to do the following:</p> <ul style="list-style-type: none"> • Demonstrate a safe attitude and an alertness and respect for the work environment • Select and wear the appropriate personal protective equipment in a workshop 	

- Recognize a potential hazard and act accordingly
- Set up a safe workshop with proper workflow and organization
- Work safely and cooperatively with classmates and instructor
- Adhere to school and woodshop safety dress code
- Adhere to school and classroom rules at all times
- React appropriately in an unexpected situation

Character Attributes

- Respect
- Responsibility

Technology Competencies

- Students understand human, cultural, and societal issues related to technology and practice legal and ethical behavior.
- Students demonstrate a sound understanding of technology concepts, systems, and operations.

Develop Teaching and Learning Plan

Teaching Strategies:

- Teacher delivers presentation on safety in the workshop and working with a safe attitude.
- Teacher gives students an introduction to the woodshop, highlighting potential hazards and areas of aid.
- Teacher distributes student copy of woodshop rules and dress code.
- Teacher introduces students to the safety colors and their meanings.
- Teacher explains the general safety guidelines of the woodshop.
- Teacher discusses fire safety, electrical safety, and chemical safety.
- Teacher shows students a Material Safety Data Sheet and explains its purpose and how it is used in many workplaces.
- Teacher demonstrates the wearing of all personal protective equipment and provides explanation of how and when to use each item.
- Teacher provides safety quiz study guide and safety contract to be signed by student and guardian.
- Teacher administers safety quiz.

Learning Activities:

- Students will take notes on all safety presentations and explanations.
- Students will tour the woodshop and identify potential hazards and areas of aid.
- Students will learn safety colors and their meanings as well as general safety guidelines of the woodshop.
- Students will observe posters of classroom rules and dress code and receive a student copy.
- Students will try on personal protective equipment and practice adjusting it to fit properly.
- Students will view a material safety data sheet and learn how it is used.
- Students will study the safety quiz study guide and prepare to take the safety quiz.
- Students will bring the safety contract home and sign it with their guardian.
- Students will take the safety quiz and make any necessary corrections after initial grade is recorded.

Assessments	
Performance Task	Other Evidence
Authentic application to evaluate student achievement of desired results designed according to GRASPS (one per marking period)	Application that is functional in a classroom context to evaluate student achievement of desired results
	<ul style="list-style-type: none"> • Signed safety contract • Completed safety quiz • Proper use of personal protective equipment
Suggested Resources	
<ul style="list-style-type: none"> • Feirer, John and Feirer, Mark. <u>Wood Technology and Processes</u>. New York, New York: Glencoe McGraw-Hill, 2002. 	

New Milford Public Schools

Committee Member: Jeff Teravainen Unit 2: Furniture Styles and Construction	Course/Subject: General Woodworking Grade Levels: 10-12 # of Weeks: 2.5
Identify Desired Results	
Connecticut Technology Education Standards	
<ul style="list-style-type: none"> • WM.04.04: Interpret a design to facilitate replication. • EKS.02.01: Model behaviors that demonstrate active listening. • WM.11.05: Identify frame and panel construction. • EKS.02.03: Compose focused copy for a variety of written documents such as: agendas, audio-visuals, bibliographies, drafts, oral presentations, reports, and technical terminology. 	
Enduring Understandings Generalizations of desired understanding via essential questions (Students will understand that ...)	Essential Questions Inquiry used to explore generalizations
<ul style="list-style-type: none"> • There are many different furniture styles, each with its own distinct construction features. • A good piece of furniture must exhibit the three elements of good design: function, appearance, and sound construction. • An in depth understanding of a furniture style is essential if one is to create successful pieces of furniture. 	<ul style="list-style-type: none"> • What are the popular styles of furniture construction and what are the distinct features that characterize them? • How does one evaluate a piece of furniture? • How does one go about creating a piece of furniture in a particular style?
Expected Performances What students should know and be able to do	
<p>Students will know the following:</p> <ul style="list-style-type: none"> • The popular styles of furniture construction and the distinct features that characterize them • The three design elements that can be applied to any object and that can be used to evaluate a piece of furniture • In addition to personal tastes, the furniture styles that are often dictated by the specific needs of the user • Furniture styles date back hundreds of years and can differ greatly <p>Students will be able to do the following:</p> <ul style="list-style-type: none"> • Evaluate a piece of furniture • Research a style of furniture and discover the distinct construction features that characterize it • Explain the historical and societal significance of a particular furniture style 	

<ul style="list-style-type: none"> • Give a presentation on a style of furniture to classmates and teacher 	
Character Attributes	
<ul style="list-style-type: none"> • Citizenship • Integrity 	
Technology Competencies	
<ul style="list-style-type: none"> • Students use critical thinking skills to plan and conduct research, to manage projects, to solve problems, and to make informed decisions using appropriate digital tools and resources. 	
Develop Teaching and Learning Plan	
<p>Teaching Strategies:</p> <ul style="list-style-type: none"> • Teacher gives presentation on the three elements of design and how they can be used to evaluate any object, including a piece of furniture. • Teacher exhibits a sample piece of furniture and guides class through an evaluation of the piece. • Teacher exhibits multiple pieces of furniture and gives an overview presentation introducing students to the concept of different furniture styles but does not go into detail about any particular style. • Teacher assigns students the task of researching a particular style of furniture and gives a presentation on it to the class. • After presentations, teacher introduces students to the piece of furniture that they will be creating during the course. 	<p>Learning Activities:</p> <ul style="list-style-type: none"> • Students will observe and take notes on teacher presentation on three elements of design. • Students will collectively evaluate a sample piece of furniture under the guidance of the teacher. • Students will observe and interact with multiple furniture samples and observe and take notes on teacher's overview presentation about furniture styles. • Students will research a particular style of furniture and discover its use, time and place of origin, distinct construction features, and historical/societal significance. • Students will give a presentation to the class on a style of furniture, detailing its use, time and place of origin, distinct construction features, and historical/societal significance.

Assessments

Performance Task Authentic application to evaluate student achievement of desired results designed according to GRASPS (one per marking period)	Other Evidence Application that is functional in a classroom context to evaluate student achievement of desired results
<p>Goal: To deliver presentation on a style of furniture</p> <p>Role: Presenter</p> <p>Audience: Class, teacher</p> <p>Situation: Presenter must educate the audience on a particular style of furniture, detailing its use, time and place of origin, distinct construction features, and historical/societal significance.</p> <p>Performance: Presentation of furniture style</p> <p>Standards for Success: Rubric for presentation, audience comprehension</p>	<ul style="list-style-type: none">• Collective evaluation of sample piece• Oral question and answer to check for understanding
Suggested Resources	
<ul style="list-style-type: none">• Feirer, John and Feirer, Mark. <u>Wood Technology and Processes</u>. New York, New York: Glencoe McGraw-Hill, 2002.	

New Milford Public Schools

Committee Member: Jeff Teravainen Unit 3: Wood Materials Classification and Sizing	Course/Subject: General Woodworking Grade Levels: 10-12 # of Weeks: 2
Identify Desired Results	
Connecticut Technology Education Standards	
<ul style="list-style-type: none"> • WM.08.01: Identify wood quality grades (premium, custom, economy, prevailing, and exceptions to grade). • WM.08.02: Identify the qualities of solid wood (AWI section 100). • WM.08.07: Identify plywood and composite materials. 	
Enduring Understandings Generalizations of desired understanding via essential questions (Students will understand that ...)	Essential Questions Inquiry used to explore generalizations
<ul style="list-style-type: none"> • Wood and wood materials are classified according to species, size, and quality. • There are many different species of wood, and a woodworker selects a species based on desired characteristics. • In addition to solid lumber, there are many engineered wood materials available that meet a variety of consumer needs. 	<ul style="list-style-type: none"> • How are wood and wood materials classified? • How does a woodworker go about selecting material for a project? • What engineered wood products are available and what are they used for?
Expected Performances	
What students should know and be able to do	
Students will know the following: <ul style="list-style-type: none"> • The sizing system for dimensional lumber (softwoods) • The difference between nominal size and actual size • The grading system for dimensional lumber • The different species of softwoods and their characteristics • The sizing system for hardwoods • The grading system for hardwoods • The different species of hardwoods and their characteristics • The different forms of rough lumber available • The difference between plain sawn and quarter sawn lumber • The different engineered wood products and sheet goods (panel stock) that are available and their purposes 	

Students will be able to do the following:

- Determine the actual size of a piece of dimensional lumber based on the nominal size
- Identify the species of a sample piece of softwood
- Interpret the grade stamp on a piece of dimensional lumber
- Discuss common uses for softwoods
- Identify defects in a piece of lumber and estimate its grade
- Identify common hardwood species by inspecting sample pieces of stock
- Describe the individual characteristics of common hardwoods
- Discuss common uses for hardwoods
- Describe the different forms of rough lumber available
- Identify common engineered wood products and sheet goods by observing sample pieces

Character Attributes

- Honesty
- Loyalty

Technology Competencies

- Students demonstrate a sound understanding of technology concepts, systems, and operations.
- Students understand human, cultural, and societal issues related to technology and practice legal and ethical behavior.

Develop Teaching and Learning Plan

Teaching Strategies:

- Teacher sets up discovery activity where students will try to determine the species of a set of hardwood samples using various materials tests and a provided information sheet.
- Teacher leads class discussion of activity findings and brings sizing and grading of hardwoods into discussion.
- Teacher gives presentation on the sizing and grading system for softwood dimensional lumber.
- Teacher exhibits sample pieces of softwood dimensional lumber. For each piece students are challenged to determine nominal size, actual size, and grade.
- Teacher exhibits samples of softwoods and hardwoods and discusses the common uses of

Learning Activities:

- Students will engage in discovery activity where they attempt to identify the species of hardwoods at first without a picture but instead with written information and materials tests only.
- Students will share their findings in a class discussion and take notes on sizing and grading of hardwoods.
- Students will observe and take notes on teacher presentation on sizing and grading system for softwood dimensional lumber.
- Students will observe and interact with sample pieces of softwood dimensional lumber and try to determine nominal size, actual size, and grade.
- Students will discuss common uses of softwoods and hardwoods.

<p>each with the class.</p> <ul style="list-style-type: none"> • Teacher exhibits samples of engineered wood materials and sheet goods and discusses their uses. 	<ul style="list-style-type: none"> • Students will observe, take notes, and discuss engineered wood materials and sheet goods and their uses.
Assessments	
<p style="text-align: center;">Performance Task</p> <p>Authentic application to evaluate student achievement of desired results designed according to GRASPS (one per marking period)</p>	<p style="text-align: center;">Other Evidence</p> <p>Application that is functional in a classroom context to evaluate student achievement of desired results</p>
	<ul style="list-style-type: none"> • Wood and wood materials classification and sizing quiz • Discussion of activity findings • Oral question and answer to check for understanding
Suggested Resources	
<ul style="list-style-type: none"> • Feirer, John and Feirer, Mark. <u>Wood Technology and Processes</u>. New York, New York: Glencoe McGraw-Hill, 2002. 	

New Milford Public Schools

Committee Member(s): Jeff Teravainen Unit 4: Project Planning and Cost Estimation	Course/Subject: General Woodworking Grade Levels: 10-12 # of Weeks: 2
Identify Desired Results	
Connecticut Technology Education Standards	
<ul style="list-style-type: none"> • EKS.08: Identify and demonstrate positive work behaviors and personal qualities needed to be employable. • WM.04.03: Explain and prepare a cut list or bill of material. • WM.04.07: Estimate materials quantities in both board feet and linear feet. 	
Enduring Understandings Generalizations of desired understanding via essential questions (Students will understand that ...)	Essential Questions Inquiry used to explore generalizations
<ul style="list-style-type: none"> • Planning a project means determining tools and materials needed and figuring costs. • A bill of materials and a stock cutting list are two key elements in planning a project. • A board foot is a volumetric unit of measure used to price lumber. • The ability to calculate board feet is essential to figuring the cost of materials for a project. 	<ul style="list-style-type: none"> • What are the necessary steps to plan a project? • How does one create a bill of materials and a stock cutting list? • Why is it necessary to calculate a board foot?
Expected Performances	
What students should know and be able to do	
<p>Students will know the following:</p> <ul style="list-style-type: none"> • The steps required to plan a project • The formula for calculating board feet • Why lumber is often priced in board feet • How to read a set of working drawings in order to plan a project • What a bill of materials is and why it is necessary to plan a project • What a stock cutting list is and why it is necessary to plan a project • What considerations must be taken when choosing a species of wood for a project <p>Students will be able to do the following:</p> <ul style="list-style-type: none"> • Read a set of working drawings and extract necessary information to plan a project • Calculate the amount of board feet of lumber needed for a project • Figure the cost of lumber for a project based on the amount of board feet needed 	

- Create a bill of materials for a project based on a set of working drawings
- Create a stock cutting list for a project based on a bill of materials
- Create a lumber order and a hardware/accessories order for a project based on a bill of materials and a stock cutting list
- Completely plan and figure the cost of the furniture piece to be crafted in this course

Character Attributes

- Compassion
- Perseverance

Technology Competencies

- Students use critical thinking skills to plan and conduct research, to manage projects, to solve problems, and to make informed decisions using appropriate digital tools and resources.
- Students demonstrate a sound understanding of technology concepts, systems, and operations.

Develop Teaching and Learning Plan

Teaching Strategies:

- Teacher gives presentation on how to calculate board feet and why lumber is often priced in board feet.
- Teacher provides a set of sample pieces of lumber and challenges students to calculate the board footage of each piece. Teacher leads discussion of findings after activity if completed.
- Teacher exhibits a simple piece of furniture that will be used as practice for project planning and cost figuring.
- Teacher distributes a set of working drawings for the practice piece of furniture.
- Teacher gives presentation on how to read and interpret the working drawings.
- Teacher guides class through the creation of bill of materials, stock cutting list, lumber order, hardware/accessory order, and overall cost figure for the practice piece of furniture.
- Teacher once again exhibits the piece of furniture that the class will be making and distributes a set of

Learning Activities:

- Students will observe and take notes on teacher presentation of board foot calculation.
- Students will practice calculating board footage with sample problems.
- Students will calculate board footage of sample pieces of lumber and discuss their findings with the teacher and the rest of the class.
- Students will view a practice piece of furniture and receive an accompanying set of working drawings.
- Students will review how to interpret the working drawings.
- Students will work collaboratively under the guidance of the teacher to create a bill of materials, stock cutting list, lumber order, hardware/accessory order, and overall cost figure for the practice piece of furniture.
- Students will once again view the piece of furniture that they will be making and receive a set of working drawings for it.

<p>working drawings for the piece.</p> <ul style="list-style-type: none"> Teacher assigns students the task of creating a bill of materials, stock cutting list, lumber order, hardware/accessory order, and overall cost figure for the furniture project. 	<ul style="list-style-type: none"> Students will use the working drawings and all of their practice materials to create a bill of materials, stock cutting list, lumber order, hardware/accessory order, and overall cost figure for the furniture project.
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Assessments

<p style="text-align: center;">Performance Task</p> <p>Authentic application to evaluate student achievement of desired results designed according to GRASPS (one per marking period)</p>	<p style="text-align: center;">Other Evidence</p> <p>Application that is functional in a classroom context to evaluate student achievement of desired results</p>
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<p>Goal: To plan and figure the cost of the furniture project</p> <p>Role: Woodworker</p> <p>Audience: Self, supervisor, co-workers</p> <p>Situation: Before work can begin on the piece of furniture, it must be completely planned out. This means creating bill of materials, stock cutting list, lumber order, hardware/accessory order, and overall cost figure.</p> <p>Product: Project plan and cost figure</p> <p>Standards for Success: Rubric used to check plan for accuracy by teacher for usability in subsequent manufacturing phase</p>	<ul style="list-style-type: none"> Oral question and answer to check for understanding Teacher checking student practice work
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Suggested Resources

<ul style="list-style-type: none"> Feirer, John and Feirer, Mark. <u>Wood Technology and Processes</u>. New York, New York: Glencoe McGraw-Hill, 2002.

New Milford Public Schools

Committee Member: Jeff Teravainen Unit 5: Jointer	Course/Subject: General Woodworking Grade Levels: 10-12 # of Weeks: 4
Identify Desired Results	
Connecticut Technology Education Standards	
<ul style="list-style-type: none"> • WM.07: Set up, adjust, operate, and maintain a variety of wood manufacturing power equipment. • WMO7.01: Make a face, joint edge, rabbet, and taper by using a jointer. • WM.03.07: Identify the proper use and function of specialty machinery (e.g., drill presses, jointers, surface planers, table saws, power miter saws, band saws, scroll saws, and stationary sanders). 	
Enduring Understandings Generalizations of desired understanding via essential questions (Students will understand that ...)	Essential Questions Inquiry used to explore generalizations
<ul style="list-style-type: none"> • A jointer is used to straighten, smooth, square up, and size stock. • Always use ALL necessary personal and machine safety and protective equipment for the jointer. • The difference between the heights of the infeed table and the outfeed table determines the depth of cut on the stock. • Face planing is the process of truing up stock by planing the surfaces. 	<ul style="list-style-type: none"> • How does one safely and effectively operate a jointer? • What personal and machine safety and protective equipment is necessary when operating a jointer? • How does one adjust the infeed and outfeed tables on a jointer? • How does one face plane a piece of stock? • Why does stock need to be trued up?
Expected Performances What students should know and be able to do	
<p>Students will know the following:</p> <ul style="list-style-type: none"> • The different stages of rough lumber available and the characteristics of each • The different types of warping that occur and what causes warping • The personal and machine safety and protective equipment necessary when operating a jointer • The steps required to true up a piece of stock on a jointer <p>Students will be able to do the following:</p> <ul style="list-style-type: none"> • Utilize all necessary personal and machine safety and protective equipment for a jointer • Identify all the parts of the jointer • Identify the “danger zone” of the jointer 	

- Safely and effectively set up a jointer for operation.
 - Adjust the outfeed beds to match the height of the jointer knives
 - Adjust the infeed bed to determine the depth of cut
 - Check cutter head guard for proper functionality
 - Set the jointer fence to a desired angle
- Safely and effectively operate a jointer
 - Identify proper grain direction when face planing
 - Utilize push blocks to move stock through the machine when face planing
 - Keep stock firmly against the fence and table throughout the cut
- Use a jointer to true up stock for furniture project

Character Attributes

- Cooperation
- Respect

Technology Competencies

- Students demonstrate a sound understanding of technology concepts, systems, and operations.
- Students demonstrate creative thinking, construct knowledge, and develop innovative products and processes using technology.

Develop Teaching and Learning Plan

Teaching Strategies:

- Teacher gives presentation on the different stages of rough lumber available and the characteristics of each.
- Teacher gives presentation on the different types of warping that occur and what causes warping.
- Teacher gives presentation and demonstration on the safe and effective set-up and operation of the jointer.
- Teacher distributes study guide for jointer operation and safety quiz.
- Teacher administers jointer operation and safety quiz.
- Teacher provides practice pieces of stock for each student and guides students through practice using jointer to true up stock.
- Teacher assigns students the task of truing up their project stock on the jointer.

Learning Activities:

- Students will observe and take notes on teacher presentation and demonstration on the different stages of rough lumber available and the characteristics of each.
- Students will observe and take notes on teacher presentation and demonstration on the different types of warping that occur and what causes warping.
- Students will observe and take notes on teacher presentation and demonstration on the safe and effective set-up and operation of the jointer.
- Students will study jointer operation and safety quiz study guide.
- Students will take jointer operation and safety quiz.
- Students will practice truing up stock on the jointer under the guidance of the teacher.
- Students will use the jointer to true up their project stock.

Assessments	
Performance Task	Other Evidence
Authentic application to evaluate student achievement of desired results designed according to GRASPS (one per marking period)	Application that is functional in a classroom context to evaluate student achievement of desired results
<p>Goal: True up furniture project stock</p> <p>Role: Woodworker</p> <p>Audience: Self, supervisor, co-workers</p> <p>Situation: Stock has been picked out for a furniture project and must be trued up before it can be used. A jointer must be used to true up the stock.</p> <p>Product: True furniture stock</p> <p>Standard for Success: Checking stock for trueness after jointing</p>	<ul style="list-style-type: none"> • Jointer operation and safety quiz • Oral question and answer to check for understanding • Teacher observation of students during jointer operation • Checking stock for trueness after jointing
Suggested Resources	
<ul style="list-style-type: none"> • Feirer, John and Feirer, Mark. <u>Wood Technology and Processes</u>. New York, New York: Glencoe McGraw-Hill, 2002. 	

New Milford Public Schools

Committee Member: Jeff Teravainen Unit 6: Planer	Course/Subject: General Woodworking Grade Levels: 10-12 # of Weeks: 4
Identify Desired Results	
Connecticut Technology Education Standards	
<ul style="list-style-type: none"> WM.07.02: Plane solid stock to given thicknesses using a planer. WM.07: Set up, adjust, operate, and maintain a variety of wood manufacturing power equipment. WM.03.07: Identify the proper use and function of specialty machinery (e.g., drill presses, jointers, surface planers, table saws, power miter saws, band saws, scroll saws, and stationary sanders). 	
Enduring Understandings Generalizations of desired understanding via essential questions (Students will understand that ...)	Essential Questions Inquiry used to explore generalizations
<ul style="list-style-type: none"> A planer is used to surface boards to thickness and to smooth rough-cut lumber, not to straighten a warped board. Always use ALL necessary personal and machine safety and protective equipment for the planer. Any board being surfaced must have one flat face. Only thin amounts of stock can be removed in each pass through the planer, so several cuts may be needed to reach the desired final thickness. 	<ul style="list-style-type: none"> What is the purpose of a planer? How does one properly set up a planer for operation? What personal and machine safety and protective equipment is necessary when operating a planer? How does one safely and effectively operate a planer?
Expected Performances	
What students should know and be able to do	
<p>Students will know the following:</p> <ul style="list-style-type: none"> The personal and machine safety and protective equipment necessary when operating a planer How to set up a planer for operation The steps required to plane a piece of stock to a desired thickness <p>Students will be able to do the following:</p> <ul style="list-style-type: none"> Utilize all necessary personal and machine safety and protective equipment for a planer Identify all the parts of a planer Identify the “danger zone” of a planer 	

- Safely and effectively set up a planer for operation
 - Set up any necessary auxiliary outfeed systems
 - Set initial depth of cut using table elevation handwheel and depth of cut gauge
 - Determine necessary bed roller setting and set bed rollers using quick set lever
 - Determine necessary feed speed and set feed speed using variable roll control
 - Locate and engage feed clutch
- Safely and effectively operate a planer
 - Identify proper grain direction of stock when thickness planing
 - Stand in proper location
 - Keep stock flat and centered at all times
 - Properly support stock during planing
 - Make proper depth of cut adjustments after each pass
 - Achieve a desired thickness
- Use a planer to bring all furniture project stock to the desired thickness

Character Attributes

- Integrity
- Responsibility

Technology Competencies

- Students use critical thinking skills to plan and conduct research, to manage projects, to solve problems, and to make informed decisions using appropriate digital tools and resources.
- Students demonstrate a sound understanding of technology concepts, systems, and operations.

Develop Teaching and Learning Plan

Teaching Strategies:

- Teacher gives presentation and demonstration on the parts of a thickness planer.
- Teacher gives presentation and demonstration on the safe and effective set-up of a planer.
- Teacher gives presentation and demonstration on the safe and effective operation of a planer.
- Teacher distributes study guide for planer operation and safety quiz.
- Teacher administers planer operation and safety quiz.
- Teacher provides practice pieces of stock for each student and guides students through practice planing

Learning Activities:

- Students will observe and take notes on teacher presentation and demonstration on the parts of a thickness planer.
- Students will observe and take notes on teacher presentation and demonstration on the safe and effective set-up of a planer
- Students will observe and take notes on teacher presentation and demonstration on the safe and effective operation of a planer.
- Students will study planer operation and safety quiz study guide.
- Students will take planer operation and safety quiz.

<p>stock to thickness.</p> <ul style="list-style-type: none"> Teacher assigns students the task of planing all of their project stock to the correct thickness. 	<ul style="list-style-type: none"> Students will practice thickness planing stock under the guidance of the teacher. Students will use the planer to thickness plane all of their project stock to the correct thickness.
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Assessments

<p style="text-align: center;">Performance Task</p> <p>Authentic application to evaluate student achievement of desired results designed according to GRASPS (one per marking period)</p>	<p style="text-align: center;">Other Evidence</p> <p>Application that is functional in a classroom context to evaluate student achievement of desired results</p>
<p>Goal: To plane furniture project stock to correct thickness</p> <p>Role: Woodworker</p> <p>Audience: Self, supervisor, co-workers</p> <p>Situation: Stock has been trued up and a planer must now be used to bring stock to the correct thickness for the project.</p> <p>Product: Furniture stock of correct thickness</p> <p>Standard for Success: Checking stock thickness after planing</p>	<ul style="list-style-type: none"> Planer operation and safety quiz Oral question and answer to check for understanding Teacher observation of students during planer operation Checking stock thickness after planing

Suggested Resources

<ul style="list-style-type: none"> Feirer, John and Feirer, Mark. <u>Wood Technology and Processes</u>. New York, New York: Glencoe McGraw-Hill, 2002.

New Milford Public Schools

Committee Member: Jeff Teravainen Unit 7: Table Saw	Course/Subject: General Woodworking Grade Levels: 10-12 # of Weeks: 4
Identify Desired Results	
Connecticut Technology Education Standards	
<ul style="list-style-type: none"> • WM.07.05: Perform a cross cut, dado, taper, and other specialized operations with a table saw. • WM.07: Set up, adjust, operate, and maintain a variety of wood manufacturing power equipment. • WM.03.07: Identify the proper use and function of specialty machinery (e.g., drill presses, jointers, surface planers, table saws, power miter saws, band saws, scroll saws, and stationary sanders). 	
Enduring Understandings Generalizations of desired understanding via essential questions (Students will understand that ...)	Essential Questions Inquiry used to explore generalizations
<ul style="list-style-type: none"> • A table saw is one of the most versatile machines in a woodshop; it can be used to rip stock to width, crosscut stock to length, as well as cut dados, tapers, rabbets, and tenons. • Always use ALL necessary personal and machine safety and protective equipment for the table saw. • Stock should always be ripped to width before crosscutting or any further milling is done to it. • The direction of blade rotation on a table saw creates the risk of kickback if stock is not held and fed properly. 	<ul style="list-style-type: none"> • What is the purpose of a table saw? • How does one properly set up a table saw for operation? • What personal and machine safety and protective equipment is necessary when operating a table saw? • How does one safely and effectively operate a table saw?
Expected Performances	
What students should know and be able to do	
Students will know the following: <ul style="list-style-type: none"> • The personal and machine safety and protective equipment necessary when operating a table saw • How to set up a table saw for operation • The steps required to rip a piece of stock to desired width on a table saw 	

Students will be able to do the following:

- Utilize all necessary personal and machine safety and protective equipment for a table saw
- Identify all the parts of the table saw
- Identify the “danger zone” of the table saw
- Safely and effectively set up a table saw for operation
 - Install rip blade guard, riving knife, anti-kickback pawls, and zero-clearance throat plate
 - Check if the rip fence is square to the table and the blade
 - Calibrate rip fence measurement to ensure accuracy of rip
 - Utilize saw tilt handwheel to set proper blade angle
 - Utilize saw raising handwheel to set proper blade height
 - Interpret saw’s LED safety check codes to determine saw’s readiness for operation
 - Install necessary auxiliary outfeed systems
- Safely and effectively operate a table saw
 - Stand in the proper location when operating
 - Utilize proper hand positioning and movement throughout the cut
 - Keep stock firmly against table and rip fence throughout cut
 - Utilize cutting aids such as push sticks and push blocks when prudent
 - Use the sound of the saw as an indicator of smooth operation
- Use a table saw to rip all furniture project stock to the correct widths

Character Attributes

- Courage
- Honesty

Technology Competencies

- Students demonstrate a sound understanding of technology concepts, systems, and operations.
- Students demonstrate creative thinking, construct knowledge, and develop innovative products and processes using technology.

Develop Teaching and Learning Plan

Teaching Strategies:

- Teacher gives presentation and demonstration on the parts of a table saw.
- Teacher gives presentation and demonstration on the safe and effective set-up of a table saw.
- Teacher gives presentation and demonstration on the safe and effective operation of a table saw.
- Teacher distributes study guide for table saw operation and safety quiz.
- Teacher administers table saw operation and safety quiz.

Learning Activities:

- Students will observe and take notes on teacher presentation and demonstration on the parts of a table saw.
- Students will observe and take notes on teacher presentation and demonstration on the safe and effective set-up of a table saw.
- Students will observe and take notes on teacher presentation and demonstration on the safe and effective operation of a table saw.

<ul style="list-style-type: none"> • Teacher provides practice pieces of stock for each student and guides students through practice ripping stock to width. • Teacher assigns students the task of using a table saw to rip all of their project stock to the correct width. 	<ul style="list-style-type: none"> • Students will study table saw operation and safety quiz study guide. • Students will take table saw operation and safety quiz. • Students will practice using a table saw to rip stock to width. • Students will use a table saw to rip all of their project stock to the correct width.
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Assessments

Performance Task	Other Evidence
Authentic application to evaluate student achievement of desired results designed according to GRASPS (one per marking period)	Application that is functional in a classroom context to evaluate student achievement of desired results
<p>Goal: To rip all furniture project stock to correct width</p> <p>Role: Woodworker</p> <p>Audience: Self, supervisor, co-workers</p> <p>Situation: Stock has been planed to the correct thickness for the project. It now must be ripped to the correct width using the table saw.</p> <p>Product: Furniture stock of correct width</p> <p>Standard for Success: Checking stock width after ripping</p>	<ul style="list-style-type: none"> • Table saw operation and safety quiz • Oral question and answer to check for understanding • Teacher observation of students during table saw operation • Checking stock width after ripping

Suggested Resources

<ul style="list-style-type: none"> • Feirer, John and Feirer, Mark. <u>Wood Technology and Processes</u>. New York, New York: Glencoe McGraw-Hill, 2002.

New Milford Public Schools

Committee Member: Jeff Teravainen Unit 8: Sliding Compound Miter Saw	Course/Subject: General Woodworking Grade Levels: 10-12 # of Weeks: 4
Identify Desired Results	
Connecticut Technology Education Standards	
<ul style="list-style-type: none"> • WM.07.23: Make cuts using a chop saw. • WM.07: Set up, adjust, operate, and maintain a variety of wood manufacturing power equipment. • WM.03.07: Identify the proper use and function of specialty machinery (e.g., drill presses, jointers, surface planers, table saws, power miter saws, band saws, scroll saws, and stationary sanders). 	
Enduring Understandings Generalizations of desired understanding via essential questions (Students will understand that ...)	Essential Questions Inquiry used to explore generalizations
<ul style="list-style-type: none"> • A sliding compound miter saw can be used to make a multitude of different crosscuts. • Always use ALL necessary personal and machine safety and protective equipment for the sliding compound miter saw. • A sliding compound miter saw can significantly increase productivity and accuracy when used safely and effectively. • Sliding compound miter saws are available in affordable models that can be used to install trimwork and molding in a house, which can improve décor and increase value. 	<ul style="list-style-type: none"> • What is the purpose of a sliding compound miter saw? • How does one properly set up a sliding compound miter saw for operation? • What personal and machine safety and protective equipment is necessary when operating a sliding compound miter saw? • How does one safely and effectively operate a sliding compound miter saw?
Expected Performances	
What students should know and be able to do	
Students will know the following: <ul style="list-style-type: none"> • The personal and machine safety and protective equipment necessary when operating a sliding compound miter saw • How to set up a sliding compound miter saw for operation • The steps required to crosscut a piece of stock to the desired length using a sliding compound miter saw • The meanings of miter, bevel, and compound miter • How to cut a miter, bevel, and compound miter with a sliding compound miter saw 	

- How to measure and mark stock for the cutting on a sliding compound miter saw
- How to cut the waste side of a line with a sliding compound miter saw

Students will be able to do the following:

- Utilize all necessary personal and machine safety and protective equipment for a sliding compound miter saw
- Identify all the parts of the sliding compound miter saw
- Identify the “danger zone” of the sliding compound miter saw
- Accurately measure and mark stock for cutting on a sliding compound miter saw
- Safely and effectively set up a sliding compound miter saw for operation
 - Adjust miter cut to a desired position
 - Adjust bevel cut to a desired position
 - Adjust blade depth to a desired position
 - Adjust kerf boards to ensure zero clearance support
 - Identify an appropriate blade for a given cutting material and operation
 - Install auxiliary stock support systems
- Safely and effectively operate a sliding compound miter saw
 - Stand in the proper location when operating
 - Utilize proper hand positioning and movement throughout the cut
 - Keep stock firmly against table and crosscut fence throughout cut
 - Utilize proper cutting stroke
 - Use the sound of the saw as an indicator of smooth operation
- Cut the waste side of a line with a sliding compound miter saw
- Cut a miter, bevel, and compound miter with a sliding compound miter saw
- Accurately crosscut stock to length using a sliding compound miter saw
- Use a sliding compound miter saw to crosscut all furniture project parts to the correct length
- Use a sliding compound miter saw to cut all necessary miters, bevels, and compound miters on furniture project parts

Character Attributes

- Cooperation
- Integrity

Technology Competencies

- Students use critical thinking skills to plan and conduct research, to manage projects, to solve problems, and to make informed decisions using appropriate digital tools and resources.
- Students demonstrate a sound understanding of technology concepts, systems, and operations.

Develop Teaching and Learning Plan

Teaching Strategies:

- Teacher gives presentation and demonstration on the parts of a sliding compound miter saw.
- Teacher gives presentation and demonstration on the safe and effective set-up of a sliding compound miter saw.
- Teacher gives presentation and demonstration on the safe and effective operation of a sliding compound miter saw.
- Teacher distributes study guide for sliding compound miter saw operation and safety quiz.
- Teacher administers sliding compound miter saw operation and safety quiz.
- Teacher provides practice pieces of stock for each student and guides students through practice crosscutting stock to length and cutting miters, bevels, and compound miters.
- Teacher assigns students the task of using a sliding compound miter saw to crosscut all furniture project parts to the correct length.
- Teacher assigns students the task of using a sliding compound miter saw to cut all necessary miters, bevels, and compound miters on furniture project parts.

Learning Activities:

- Students will observe and take notes on teacher presentation and demonstration on the parts of a sliding compound miter saw.
- Students will observe and take notes on teacher presentation and demonstration on the safe and effective set-up of a sliding compound miter saw.
- Students will observe and take notes on teacher presentation and demonstration on the safe and effective operation of a sliding compound miter saw.
- Students will study sliding compound miter saw operation and safety quiz study guide.
- Students will take sliding compound miter saw operation and safety quiz.
- Students will practice using a sliding compound miter saw to crosscut stock to length and cut miters, bevels, and compound miters under the guidance of the teacher.
- Students will use a sliding compound miter saw to crosscut all furniture project parts to the correct length.
- Students will use a sliding compound miter saw to cut all necessary miters, bevels, and compound miters on furniture project parts.

Assessments	
Performance Task	Other Evidence
<p>Authentic application to evaluate student achievement of desired results designed according to GRASPS (one per marking period)</p>	<p>Application that is functional in a classroom context to evaluate student achievement of desired results</p>
<p>Goal: To crosscut all furniture project parts to length and to cut all necessary miters, bevels, and compound miters using a sliding compound miter saw</p> <p>Role: Woodworker</p> <p>Audience: Self, supervisor, co-workers</p> <p>Situation: Stock has been ripped to the correct widths for the project. It now must be crosscut into individual parts.</p> <p>Product: Furniture parts of correct length with all necessary miters, bevels, and compound miters.</p> <p>Standard for Success: Checking parts after cutting</p>	<ul style="list-style-type: none"> • Sliding compound miter saw operation and safety quiz • Oral question and answer to check for understanding • Teacher observation of students during sliding compound miter saw operation • Checking parts lengths after crosscutting • Checking angles of miters, bevels, and compound miters after cutting
Suggested Resources	
<ul style="list-style-type: none"> • Feirer, John and Feirer, Mark. <u>Wood Technology and Processes</u>. New York, New York: Glencoe McGraw-Hill, 2002. 	

New Milford Public Schools

Committee Member: Jeff Teravainen Unit 9: Band Saw	Course/Subject: General Woodworking Grade Levels: 10-12 # of Weeks: 3
Identify Desired Results	
Connecticut Technology Education Standards	
<ul style="list-style-type: none"> • WM.03.06: Identify proper use and function of stationary saws. • WM.07: Set up, adjust, operate, and maintain a variety of wood manufacturing power equipment. • WM.03.07: Identify the proper use and function of specialty machinery (e.g., drill presses, jointers, surface planers, table saws, power miter saws, band saws, scroll saws, and stationary sanders). 	
Enduring Understandings Generalizations of desired understanding via essential questions (Students will understand that ...)	Essential Questions Inquiry used to explore generalizations
<ul style="list-style-type: none"> • A band saw is primarily used for cutting curves, circles, and irregular shapes. It can also be used for resawing – sawing wood into thinner material. • Always use ALL necessary personal and machine safety and protective equipment for the band saw. • Constructing and using jigs can aid in specific tasks, making them faster and more efficient. 	<ul style="list-style-type: none"> • What is the purpose of a band saw? • How does one properly set up a band saw for operation? • What personal and machine safety and protective equipment is necessary when operating a band saw? • How does one safely and effectively operate a band saw? • What is a jig and how can it be used to aid a cutting process?
Expected Performances	
What students should know and be able to do	
<p>Students will know the following:</p> <ul style="list-style-type: none"> • A jig is a device, often shop made, that attaches to either a machine or work piece and makes a particular process safer, more effective, and/or more efficient • The personal and machine safety and protective equipment necessary when operating a band saw • How to set up a band saw for operation • The steps required to cut a curve on a band saw <p>Students will be able to do the following:</p> <ul style="list-style-type: none"> • Utilize all necessary personal and machine safety and protective equipment for a band saw • Identify all the parts of a band saw • Identify the “danger zone” of a band saw 	

- Change a blade on a band saw
- Use a jig to aid in a cutting operation
- Safely and effectively set up a band saw for operation
 - Adjust blade guard to proper height
 - Adjust blade roller guide bearings to proper distance from blade
 - Set table tilt to desired angle
- Safely and effectively operate a band saw
 - Stand in the proper location when operating
 - Utilize proper hand positioning and movement throughout the cut
 - Keep stock firmly against table throughout cut
 - Utilize cutting aids such as jigs when prudent
 - Use the sound of the saw as an indicator of smooth operation
 - Perform the proper procedure for cutting a curve
- Use a band saw to cut necessary curves on some of the furniture project parts

Character Attributes

- Compassion
- Perseverance

Technology Competencies

- Students demonstrate a sound understanding of technology concepts, systems, and operations.
- Students demonstrate creative thinking, construct knowledge, and develop innovative products and processes using technology.

Develop Teaching and Learning Plan

Teaching Strategies:

- Teacher gives presentation and demonstration on the parts of a band saw.
- Teacher gives presentation and demonstration on the safe and effective set-up of a band saw.
- Teacher gives presentation and demonstration on the safe and effective operation of a band saw.
- Teacher distributes study guide for band saw operation and safety quiz.
- Teacher administers band saw operation and safety quiz.
- Teacher provides practice pieces of stock for each student and guides students through practice cutting curves with a band saw.
- Teacher assigns students the task of using a band saw to cut curves on some of the project parts.

Learning Activities:

- Students will observe and take notes on teacher presentation and demonstration on the parts of a band saw.
- Students will observe and take notes on teacher presentation and demonstration on the safe and effective set-up of a band saw.
- Students will observe and take notes on teacher presentation and demonstration on the safe and effective operation of a band saw.
- Students will study band saw operation and safety quiz study guide.
- Students will take band saw operation and safety quiz.
- Students will practice using band saw to cut curves.

	<ul style="list-style-type: none"> • Student will use the band saw to cut curves on some of the project parts.
Assessments	
<p style="text-align: center;">Performance Task</p> <p>Authentic application to evaluate student achievement of desired results designed according to GRASPS (one per marking period)</p>	<p style="text-align: center;">Other Evidence</p> <p>Application that is functional in a classroom context to evaluate student achievement of desired results</p>
	<ul style="list-style-type: none"> • Band saw operation and safety quiz • Oral question and answer to check for understanding • Teacher observation of students during band saw operation • Checking parts after cutting
Suggested Resources	
<ul style="list-style-type: none"> • Feirer, John and Feirer, Mark. <u>Wood Technology and Processes</u>. New York, New York: Glencoe McGraw-Hill, 2002. 	

New Milford Public Schools

Committee Member: Jeff Teravainen Unit 10: Drill Press	Course/Subject: General Woodworking Grade Levels: 10-12 # of Weeks: 3
Identify Desired Results	
Connecticut Technology Education Standards	
<ul style="list-style-type: none"> • WM.07.06: Drill a hole to given dimensions with a drill press. • WM.07: Set up, adjust, operate and maintain a variety of wood manufacturing power equipment. • WM.03.07: Identify the proper use and function of specialty machinery (e.g., drill presses, jointers, surface planers, table saws, power miter saws, band saws, scroll saws, and stationary sanders). 	
Enduring Understandings Generalizations of desired understanding via essential questions (Students will understand that ...)	Essential Questions Inquiry used to explore generalizations
<ul style="list-style-type: none"> • A drill press is primarily used to drills holes of various diameters at various depths and angles. • There are many different types of drill bits that can be used to perform different processes. • Always use ALL necessary personal and machine safety and protective equipment for the drill press. • Calculating the proper drill speed for the size and type of bit and material being drilled is critical. 	<ul style="list-style-type: none"> • What is the purpose of a drill press? • How does one properly set up a drill press for operation? • What personal and machine safety and protective equipment is necessary when operating a drill press? • How does one safely and effectively operate a drill press?
Expected Performances	
What students should know and be able to do	
<p>Students will know the following:</p> <ul style="list-style-type: none"> • The personal and machine safety and protective equipment necessary when operating a drill press • How to set up a drill press for operation • The steps required to drill a hole in a part or a piece of stock • How to calculate drill speed for a particular bit and material <p>Students will be able to do the following:</p> <ul style="list-style-type: none"> • Utilize all necessary personal and machine safety and protective equipment for a drill press • Identify all the parts of drill press • Identify the potential hazards of a drill press 	

- Safely and effectively set up a drill press for operation
 - Select and install the proper bit for the desired hole, size, and type
 - Calculate and adjust the appropriate speed for the size and type of bit and material being drilled
 - Properly adjust the table height
 - Select and install appropriate work piece hold downs
 - Properly adjust the depth stop to the desired hole depth
- Safely and effectively operate a drill press
 - Stand in the proper location when operating
 - Utilize proper hand positioning and movement throughout the process
 - Keep stock firmly against table throughout process
 - Use the sound of the drill press as an indicator of smooth operation
- Use a drill press to drill necessary holes in project parts

Character Attributes

- Respect
- Responsibility

Technology Competencies

- Students use critical thinking skills to plan and to conduct research, to manage projects, to solve problems, and to make informed decisions using appropriate digital tools and resources.
- Students demonstrate a sound understanding of technology concepts, systems, and operations.

Develop Teaching and Learning Plan

Teaching Strategies:

- Teacher gives presentation and demonstration on the parts of a drill press.
- Teacher gives presentation and demonstration on the safe and effective set-up of a drill press.
- Teacher gives presentation and demonstration on the safe and effective operation of a drill press.
- Teacher distributes study guide for drill press operation and safety quiz.
- Teacher administers drill press operation and safety quiz.
- Teacher provides practice pieces of stock for each student and guides students through practice drilling holes in stock.
- Teacher assigns students the task of using a drill press to drill necessary holes in project parts.

Learning Activities:

- Students will observe and take notes on teacher presentation and demonstration on the parts of a drill press.
- Students will observe and take notes on teacher presentation and demonstration on the safe and effective set-up of a drill press.
- Students will observe and take notes on teacher presentation and demonstration on the safe and effective operation of a drill press.
- Students will study drill press operation and safety quiz study guide.
- Students will take drill press operation and safety quiz.
- Students will practice using drill press to drill holes in stock.
- Students will use the drill press to drill necessary holts in project paths

Assessments	
Performance Task	Other Evidence
Authentic application to evaluate student achievement of desired results designed according to GRASPS (one per marking period)	Application that is functional in a classroom context to evaluate student achievement of desired results
	<ul style="list-style-type: none"> • Drill press operation and safety quiz • Oral question and answer to check for understanding • Teacher observation of students during drill press operation • Checking holes in parts after drilling
Suggested Resources	
<ul style="list-style-type: none"> • Feirer, John and Feirer, Mark. <u>Wood Technology and Processes</u>. New York, New York: Glencoe McGraw-Hill, 2002. 	

New Milford Public Schools

Committee Member: Jeff Teravainen Unit 11: Assembly and Fastening	Course/Subject: General Woodworking Grade Levels: 10-12 # of Weeks: 5
Identify Desired Results	
Connecticut Technology Education Standards	
<ul style="list-style-type: none"> • WM.11.01: Layout components of a piece of furniture. • WM.11.09: Describe gluing and clamping techniques. • WM.11.11: Identify hardware. • WM.11.10: Identify fasteners. • EKS.05: Employ critical thinking skills independently and in teams to solve problems and to make decisions (e.g., analyze, synthesize and evaluate). 	
Enduring Understandings Generalizations of desired understanding via essential questions (Students will understand that ...)	Essential Questions Inquiry used to explore generalizations
<ul style="list-style-type: none"> • Assembly of a large project requires advanced planning and a thorough trial assembly. • Assembly of a large project requires teamwork between multiple people to ensure proper support and alignment of parts. • The order of assembly and type of fasteners, clamps, and adhesive used is critical to a successful assembly. 	<ul style="list-style-type: none"> • What types of adhesive, fasteners, and clamps are required for a large-scale assembly and how are they used? • What is the best way to assemble a large project? • What does one do if parts do not fit during assembly?
Expected Performances	
What students should know and be able to do	
<p>Students will know the following:</p> <ul style="list-style-type: none"> • The various types of fasteners available and how to select the appropriate fasteners for a particular project • The proper order of assembly for a large project • How to select the appropriate adhesive depending on furniture use and how to properly apply it during assembly • The tools used during assembly • How to troubleshoot parts if they do not fit properly <p>Students will be able to do the following:</p> <ul style="list-style-type: none"> • Select and use the appropriate fasteners for a particular project • Select the appropriate adhesive based on furniture use and properly apply it during assembly 	

<ul style="list-style-type: none"> • Select and use the appropriate clamps during a large-scale assembly • Perform a trial assembly of a large-scale project • Utilize proper order of assembly when assembling a large-scale project • Work cooperatively with classmates to ensure proper support and alignment of parts during assembly • Correct parts if they do not fit • Assemble furniture project 	
Character Attributes	
<ul style="list-style-type: none"> • Compassion • Cooperation 	
Technology Competencies	
<ul style="list-style-type: none"> • Students demonstrate a sound understanding of technology concepts, systems, and operations. • Students demonstrate creative thinking, construct knowledge, and develop innovative products and processes using technology. 	
Develop Teaching and Learning Plan	
<p>Teaching Strategies:</p> <ul style="list-style-type: none"> • Teacher discusses importance of teamwork, attention to detail, and problem solving during assembly. • Teacher exhibits and discusses the various adhesives and fasteners that are available and how to select and use the appropriate ones for a particular assembly. • Teacher exhibits the tools and clamps required for assembly and demonstrates how they are used. • Teacher gives presentation and demonstration on performing a trial assembly while explaining proper order of assembly. • Teacher guides students through a trial assembly of their projects. • Teacher discusses methods of troubleshooting a part if it does not fit. • Teacher assigns students the task of assembling their furniture projects. 	<p>Learning Activities:</p> <ul style="list-style-type: none"> • Students will discuss and take notes on the importance of teamwork, attention to detail, and problem solving during assembly. • Students will observe and take notes on various adhesives and fasteners that are available and how to select and use the appropriate ones for a particular assembly. • Students will observe and take notes on the tools and clamps required for assembly and how they are used. • Students will observe and take notes on demonstration of trial assembly and proper order of assembly. • Students will perform a trial assembly. • Students will troubleshoot parts if necessary. • Students will assemble their furniture projects.

Assessments	
Performance Task	Other Evidence
Authentic application to evaluate student achievement of desired results designed according to GRASPS (one per marking period)	Application that is functional in a classroom context to evaluate student achievement of desired results
<p>Goal: To assemble furniture project</p> <p>Role: Woodworker</p> <p>Audience: Self, supervisor, co-workers</p> <p>Situation: All parts have been cut and shaped. The project must now be assembled.</p> <p>Product: Fully assembled piece of furniture</p> <p>Standard for Success: Assembly rubric to checking project for quality assembly job</p>	<ul style="list-style-type: none"> • Oral question and answer to check for understanding • Trial assembly
Suggested Resources	
<ul style="list-style-type: none"> • Feirer, John and Feirer, Mark. <u>Wood Technology and Processes</u>. New York, New York: Glencoe McGraw-Hill, 2002. 	

New Milford Public Schools

Committee Member: Jeff Teravainen Unit 12: Sanding and Finishing	Course/Subject: General Woodworking Grade Levels: 10-12 # of Weeks: 3
Identify Desired Results	
Connecticut Technology Education Standards	
<ul style="list-style-type: none"> • WM.06.02: Demonstrate curved sanding. • WM.07.32: Demonstrate the ability to use an electric sander. • WM.16.01: Define finish terminology. • WM.16.04: Define stain. • WM.16.06: Contrast exposed, semi-exposed, and back priming. • WM.16.07: Finish materials according to given designs and specifications. 	
Enduring Understandings Generalizations of desired understanding via essential questions (Students will understand that ...)	Essential Questions Inquiry used to explore generalizations
<ul style="list-style-type: none"> • Large projects with complex shapes pose more challenges than small projects when sanding as they require advanced techniques. • The quality of the sanding and surface preparation will determine the quality of the finish. • There are many different types of finishes and application methods; it is important to select the appropriate one. 	<ul style="list-style-type: none"> • How does one properly sand a large project? • What steps are necessary to prepare a project for finishing? • What types of finishes are there? • How does one select an appropriate finish for a particular project? • How does one properly apply a finish?
Expected Performances	
What students should know and be able to do	
<p>Students will know the following:</p> <ul style="list-style-type: none"> • The steps necessary to prepare a project for finishing • The importance of dust collection and respiratory safety when sanding • What grits are appropriate to use when preparing for a furniture grade finish • The different types of finishes and application methods that are available and the advantages and disadvantages of each • The personal protection and safety precautions that must be considered when applying finishes <p>Students will be able to do the following:</p> <ul style="list-style-type: none"> • Sand a large project and use advanced sanding techniques to prepare for finishing • Identify and use appropriate grits of abrasive for a furniture grade finish 	

- Utilize all appropriate dust collection and respiratory protection methods when sanding
- Select and apply an appropriate finish to a piece of furniture

Character Attributes

- Honesty
- Integrity
- Perseverance

Technology Competencies

- Students use critical thinking skills to plan and conduct research, to manage projects, to solve problems, and to make informed decisions using appropriate digital tools and resources.
- Students demonstrate a sound understanding of technology concepts, systems, and operations.

Develop Teaching and Learning Plan

Teaching Strategies:

- Teacher reviews abrasives and the classification system learned in Introductory Woodworking.
- Teacher explains and demonstrates advanced sanding techniques required to prepare a piece of furniture with complex shapes.
- Teacher demonstrates dust collection and respiratory protection methods necessary when sanding.
- Teacher discusses with students the importance of prep work when finishing any surface, emphasizing that the preparation of the surface determines the quality of the finish.
- Teacher assigns students the task of sanding their projects and preparing them for finish.
- Teacher exhibits and demonstrates various finish types and application methods, explaining their advantages and disadvantages.
- Teacher assigns students the task of finishing their projects.

Learning Activities:

- Students will review and take notes on abrasives and the abrasive classification system.
- Students will observe, take notes on, and practice advanced sanding techniques used for complex shapes under the guidance of the teacher.
- Students will observe and take notes on dust collection and respiratory protection methods necessary when sanding.
- Students will discuss the importance of prep work when finishing any surface.
- Students will sand their projects with progressively finer grits and prepare them for finishing.
- Students will observe and take notes on teacher demonstration and explanation of various finish types, application methods, and their advantages and disadvantages.
- Students will apply a finish to their projects.

Assessments	
Performance Task	Other Evidence
Authentic application to evaluate student achievement of desired results designed according to GRASPS (one per marking period)	Application that is functional in a classroom context to evaluate student achievement of desired results
<p>Goal: To sand and finish the furniture project</p> <p>Role: Woodworker</p> <p>Audience: Self, supervisor, co-workers</p> <p>Situation: The furniture project is assembled. It must now be sanded and finished.</p> <p>Product: Finished piece of furniture</p> <p>Standard for Success: Finished project rubric to check after sanding</p>	<ul style="list-style-type: none"> • Oral question and answer to check for understanding • Observation of students during sanding and finishing
Suggested Resources	
<ul style="list-style-type: none"> • Feirer, John and Feirer, Mark. <u>Wood Technology and Processes</u>. New York, New York: Glencoe McGraw-Hill, 2002. 	