Carpentry/Woods III

Grades 11-12

Prerequisite: Woods II

Credits: 5

ABSTRACT

Advanced woods course provides the opportunity to study and investigate the principles of cabinetry and furniture design. Students learn craftsmanship through established industry standards including the latest technological techniques. Students implement lessons in advanced machine operations, joinery, cabinet construction, and finishing. Each student will complete selected exercises, construct an heirloom project, and study mass-production techniques. Students have the opportunity to utilize knowledge and skills learned in post-secondary/vocational education. All skills, techniques, consumer knowledge, environmentally sound practices, and safety regulations act as the foundational basis for post-secondary education and/or employment.
## MONTVILLE TOWNSHIP PUBLIC SCHOOLS
Carpentry/Woods III

<table>
<thead>
<tr>
<th>Unit of Study:</th>
<th>Unit #1 Creating and Reading Working Drawings</th>
<th>Unit #2 Materials</th>
<th>Unit #3 Shop Safety/Awareness</th>
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<tbody>
<tr>
<td>(Timeframe)</td>
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### STAGE 1: Desired Results

#### Established Goals:

**NJSLS:**
(Standards that are only applicable to the unit; include technology and 21st century standards)

- Technology
- 21st Century Life and Careers

#### Enduring Understandings:
(What big ideas will students know?)

- Understand the importance a working drawing has in the production of a woodworking project.
- The basis for all woodworking materials can be found in nature.
- Following safety procedures and using personal protection equipment will reduce the risk of injury.

#### Essential Questions:
(What questions are open-ended, debatable, global and spark critical thinking?)

1. What are the type of Working drawings that could be used in the production process of a woodworking project?
2. What is the importance of the materials cut list and how is it used with a working drawing?
1. What are forest materials?
2. What are engineered lumber products?
3. How has the usage of materials changed over time?
1. What are the safety concerns to be considered when working in a lab setting in school or on the job?
2. What protection can be used in a laboratory environment?
3. What should be part of an effective safety program?

### STAGE 2: Evidence

#### Assessment & Evidence:
(Through what authentic performance tasks will students demonstrate the desired understandings?)

- Unit test
- Performance test of material selection for desired purpose
- Final project
- Mid term exam
- Final exam

- Student self assessment
- Unit test
- Performance test of material selection for desired purpose
- Final project
- Mid term exam
- Final exam

- Safety Test
- Signed safety contracts.
- Student self-assessment of safety procedures
- Performance test to include safety scenarios and emergency situations
- Create safety posters to be hung around classroom
# STAGE 3: Learning Plan

## Learning Activities/Content:

*What is the core content of this unit? What performance tasks/activities will students do? What skills will students know?*

- Lecture and Class discussion on various types of working drawings and how to go about reading them.
- Students will take information from an assembly drawing to create a materials/cut list.
- Students will read and create a variety of working drawings.

- Lecture and class discussion
- Demonstration
- Reading assignment from current textbook
- Students will participate in a virtual field trip to lumber harvesting operation, lumber mill, forest research lab
- Observe video of process of creating sheet goods, veneers, and lumber from logs.
- Analyze the applications of various sheet goods
- Identify characteristics used in lumber and plywood grading systems
- Streaming video of the production of engineered lumber products

Understand the following:

- What are engineered lumber products?
- What is the difference between nominal and actual size specifications?
- How are forests materials harvested and processed?
- Why do specific forest products are more suited to certain applications than others?

## Resources:

- Lecture and Discussion
- Examples of working drawings
- Material list samples
- Text book

- Lecture
- Pieces of cabinet grade lumber, plywood, particle board, Homasote, Masonite etc

- Lecture
- PowerPoint presentation on classroom and occupational safety procedures, PPE, and hazardous signage.
<table>
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<tr>
<th>Interdisciplinary Connections: (e.g. writing, literacy, math, science, history, 21st century life and careers, technology)</th>
<th>Mathematics</th>
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9.3.12.AC- CST.5 Apply practices and procedures required to maintain jobsite safety.  
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**Differentiation:** (What type of differentiated instruction will be used for ELL, SP.ED. and G&T students?)

- Students with individual learning styles can be assisted through adjustments in assessment standards, one-to-one teacher support, additional testing time, and use of visual and auditory teaching methods.
- A wide variety of assessments and strategies complement the individual learning experience.
- A hands-on approach to assignments and projects is recommended as the most effective method of learning.
- Provide time for revision of work when students show need.

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<th>Unit of Study: (Timeframe)</th>
<th>Unit # 4 Hand Tools/Machinery</th>
<th>Unit # 5 Power Tool Safety and Awareness</th>
<th>Unit # 6 Joinery and Fastening Techniques</th>
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<tr>
<td><strong>Established Goals:</strong></td>
<td>21st Century Life and Careers</td>
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<tr>
<td><strong>Enduring Understandings:</strong></td>
<td>Tools and machinery have specific functions and methods for usage.</td>
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<td>Wood products use a variety of joinery techniques and fastening methods in their assembly.</td>
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<td>(What big ideas will students know?)</td>
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<td>Each technique has a specific application.</td>
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<td>(What questions are open-ended, debatable, global and spark critical thinking?)</td>
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## STAGE 2: Evidence

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<td>(Through what authentic performance tasks will students demonstrate the desired understandings?)</td>
<td>Student self-assessment&lt;br&gt;Unit test&lt;br&gt;Performance test of material selection for desired purpose&lt;br&gt;Performance test on tool selection and proper usage&lt;br&gt;Safety rules for hand tool usage in notebook&lt;br&gt;Final project&lt;br&gt;Midterm exam&lt;br&gt;Safety test&lt;br&gt;Performance test of machine/tool selection for desired purpose&lt;br&gt;Performance test of safe use and operation of tools and machinery&lt;br&gt;Final project&lt;br&gt;Safety rules for portable power tool and machinery usage in notebook&lt;br&gt;Final project&lt;br&gt;Midterm exam&lt;br&gt;Final Exam</td>
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<td>(By what criteria will performances of understanding be judged?)</td>
<td>Student self-assessment&lt;br&gt;Unit test&lt;br&gt;Performance test of material selection for desired purpose&lt;br&gt;Performance test of proper joinery technique&lt;br&gt;Performance test of appropriate glue and adhesive selection&lt;br&gt;Final project&lt;br&gt;Midterm exam&lt;br&gt;Final Exam</td>
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<td>(What is the core content of this unit? What performance tasks/activities will students do? What skills will students know?)</td>
<td>● Lecture and class discussion&lt;br&gt;● Reading assignment on hand tool usage and safety&lt;br&gt;● Demonstration&lt;br&gt;● Streaming video: Practice safe use of tools&lt;br&gt;● Select appropriate tool for task at hand&lt;br&gt;● Adjust tool when necessary for higher quality work&lt;br&gt;● Student will demonstrate the ability to understand:&lt;br&gt;  ○ What hand tools are used in general Woodworking?&lt;br&gt;  ○ What hand tools are used for cutting?&lt;br&gt;  ○ What hand tools are used for drilling and Boring?&lt;br&gt;  ○ What hand tools are used for planning and Jointing?</td>
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<tr>
<th>What hand tools are used for measuring and Drawing?</th>
<th>What hand tools are used for sanding?</th>
<th>Streaming video of process of creating and using glues, adhesives and mechanical fasteners to connect project pieces</th>
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<td>○</td>
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<td>Identifying what types of mechanical fasteners are used in wood product construction.</td>
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<td>Determine what types of glues and adhesives are used in wood product construction for interior as well as exterior applications?</td>
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### Resources:

- Lecture
- Various tools and scrap lumber for demonstration of techniques
- Current textbook
- T-square, Try square, speed square, framing square, bench ruler, tape measure, marking gauge, pencil, awl
- Block plane, bench plane, jack plane, fore plane, jointer plane
- Rip saw, cross cut saw, back saw, coping saw, key hole saw
- Auger bit and brace, hand drill and bits, Gimlets
- Sanding block, sandpaper
- Computer, projector with screen

- Lecture
- Machinery and scrap wood to demonstrate techniques
- Portable power tools and scrap wood to demonstrate techniques
- Jointer, surface, porta plane
- Jig saw, band saw, table saw, radial arm saw, miter saw
- Battery drill, corded drill, drill press, dowels and various drills, hole saws and bits
- Routers, shaper, bits and cutters
- ¼ sheet sander, random orbit sander, spindle sander, belt sander, disc sander, portable belt sander, abrasive papers, discs, drums and belts
- Computer, projector, and screen

- Lecture
- Sample pieces for various geometric shapes
- Sample pieces of various joints butt joint, lap joint, dado joint, rabbet joint, miter joint, spline joint, compound miter joint, etc.
- Examples of various mechanical fasteners nails, screws, lag bolts, carriage bolts, hex bolts, dowels, splines, biscuits
- Sample pieces of various adhesives wood glue, resorcinol glue, polyurethane adhesive, hide glue, contact, cement
- Current textbook
- Computer, projector, and screen

### Interdisciplinary Connections:

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