INTRODUCTION TO WOODWORKING

Grade Level: 9-12

Credits: 5

BOARD OF EDUCATION ADOPTION DATE:

AUGUST 30, 2010

SUPPORTING RESOURCES AVAILABLE IN DISTRICT RESOURCE SHARING
APPENDIX A: ACCOMMODATIONS AND MODIFICATIONS
APPENDIX B: ASSESSMENT EVIDENCE
APPENDIX C: INTERDISCIPLINARY CONNECTIONS
FREEHOLD REGIONAL HIGH SCHOOL DISTRICT

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Course Philosophy

The Introduction to Woodworking course is an introductory hands-on course dealing with construction methods, materials, and safety regulations. All skills and techniques acquired within the Introduction to Woodworking course are considered by industry professionals to be the fundamental knowledge for students pursuing advanced woodworking course work. The 21st century work force skills in presentation, communication, mathematics, science, leadership, collaboration, and problem solving are emphasized and assessed in Introduction to Woodworking course work.

Course Description

Introduction to Woodworking is designed as a basic exploratory woodworking course. Students learn craftsmanship through established industry standards including the latest technological techniques. The students experience the use of all available hand tools in addition to basic machinery and operations. The properties of wood, construction methods, and finishing procedures are the fundamental units of study. All technical skills, woodworking techniques, consumer knowledge, environmentally sound practices, and safety regulations act as the foundational basis for post-secondary education and/or employment.
# Introduction to Woodworking

## Relevant Standards

<table>
<thead>
<tr>
<th>Standard</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>9.4.12.B.40-46</td>
<td>Following safety procedures and using personal protection equipment will reduce the risk of injury.</td>
</tr>
<tr>
<td>9.2.12.F.1 - 5</td>
<td></td>
</tr>
<tr>
<td>9.4.12.M.33-43</td>
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</tr>
<tr>
<td>8.1.12.A.1</td>
<td>Planning is an essential component to design, construction, material usage, and efficiency.</td>
</tr>
<tr>
<td>8.2.12.A.1</td>
<td>The basis for all woodworking materials are found in nature.</td>
</tr>
<tr>
<td>8.2.12.B.1-3</td>
<td>Tools and machinery have specific functions and methods for usage.</td>
</tr>
<tr>
<td>8.2.12.C.2-3</td>
<td></td>
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<tr>
<td>9.4.12.B(1).9</td>
<td></td>
</tr>
<tr>
<td>9.4.12.B.18,20-23</td>
<td></td>
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<tr>
<td>9.4.12.B.72 – 75</td>
<td></td>
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<tr>
<td>8.2.12.F2</td>
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<tr>
<td>9.4.12.B(2).17,</td>
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<tr>
<td>9.4.B.59,61,64,75</td>
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<tr>
<td>9.4.12.C.46</td>
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</tr>
<tr>
<td>9.4.12.M(3).3 – 9,</td>
<td></td>
</tr>
</tbody>
</table>

## Diagnostic (before)
- Pretest
- Student Survey
- Oral Questions
- Discussion
- Anticipatory Set
- Questions
- Signed Safety
- Contracts.

## Formative (during)
- Journals
- Quizzes
- Written Assignments
- Oral Presentations
- Observations
- Participatory Rubrics
- Role Play
- Research Assignments
- Interviews

## Summative (after)
- Projects
- Mid Terms
- Final Exam

## Essential Questions

<table>
<thead>
<tr>
<th>Standard</th>
<th>Questions</th>
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<tbody>
<tr>
<td>9.4.12.B.40-46</td>
<td>What are the safety concerns to be considered when working in a lab setting in school or on the job?</td>
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<tr>
<td>9.2.12.F.1 - 5</td>
<td>What protection can be used in a laboratory environment?</td>
</tr>
<tr>
<td>9.4.12.M.33-43</td>
<td>What should be part of an effective safety program?</td>
</tr>
<tr>
<td>9.4.12.M(6).1 – 5</td>
<td>What characteristics are essential to a functional team?</td>
</tr>
<tr>
<td>8.1.12.A.1</td>
<td>Why is planning an important aspect to project work?</td>
</tr>
<tr>
<td>8.2.12.A.1</td>
<td>How does planning influence efficiency?</td>
</tr>
<tr>
<td>8.2.12.B.1-3</td>
<td>Why is planning vital to material usage and construction?</td>
</tr>
<tr>
<td>8.2.12.C.2-3</td>
<td>How is the design of a product influenced by planning?</td>
</tr>
<tr>
<td>9.4.12.B(1).9</td>
<td>What specific forest products are more suited to certain applications than others?</td>
</tr>
<tr>
<td>9.4.12.B.18,20-23</td>
<td>Why forest products are considered a sustained industry?</td>
</tr>
<tr>
<td>9.4.12.B.72 – 75</td>
<td></td>
</tr>
<tr>
<td>Relevant Standards¹</td>
<td>Enduring Understandings</td>
</tr>
<tr>
<td>--------------------</td>
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</tr>
</tbody>
</table>
What types of mechanical fasteners are used in wood product construction?  
What types of glues and adhesives are used in wood product construction? | Pre written assessment  
Discussion | Quizzes  
Research  
Performance test  
Model Demonstrated behavior |
| 9.4.12.B(2).17, 9.4.12.M(2).3 – 4 | The type of finish on a wood product will determine its durability and application. | What types of finishes would be used for an interior type project?  
What type of finishes would be used for a project exposed to the weather outside?  
What are the types of solvents used in the various finishes?  
Explain the techniques for applying finish to a product.  
What are the procedures for cleaning up after applying finish to a project? | Discussion  
Pre written assessment  
Student survey  
Anticipatory set questions | Model demonstrated behavior  
Quizzes  
Performance test | Final Project  
Final Exam |
What are the methods of construction and assembly for table tops?  
What are the methods of construction and assembly for a wall display cabinet? | Discussion  
Student Survey  
Pre written assessment  
Anticipatory set questions | Model demonstrated behavior  
Quizzes  
Performance test | Final Project |
# Introduction to Woodworking

<table>
<thead>
<tr>
<th>Unit Title</th>
<th>Unit Understandings and Goals</th>
<th>Recommended Duration</th>
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</thead>
</table>
| Unit #1: Safety             | Following safety procedures and using personal protective equipment will reduce the risk of injury.  
  - Students will be able to identify and implement proper safety in a work environment, including working as a team. | 3 weeks              |
| Unit #2: Materials          | The basis for all woodworking materials are found in nature.  
  - Students will be able to identify and select appropriate materials for their desired product. | 3 weeks              |
| Unit #3: Planning           | Planning is an essential component to design, construction, material usage, and efficiency.  
  - Students will be able to successfully complete a bill of materials, a plan of procedure and select appropriate materials for each of their projects. | 2 weeks              |
| Unit #4: Hand tools         | Tools and machinery have specific functions and methods for usage.  
  - Students will be able to properly select and utilize the appropriate hand tools for the necessary task. | 8 weeks              |
| Unit #5: Joinery/Fasteners  | Wood products use a variety of joinery techniques and fastening methods in their assembly  
  - Students will be able to identify and utilize a variety of joinery techniques using a variety of mechanical fasteners. | 3 weeks              |
| Unit #6: Power Tools/        | Tools and machinery have specific functions and methods for usage.  
  Machinery          - Students will be able to properly select and safely utilize the appropriate portable power tool or machine for the task at hand. | 9 weeks              |
| Unit #7: Assembly           | Methods of construction and assembly determine the difference in strength and quality.  
  - Students will be able to properly assemble their pieces into a project using appropriate methodology. | 3 weeks              |
| Unit #8: Finishing          | The type of finish on a wood product will determine its durability and application.  
  - Students will be able to properly select, apply, and cleanup stains and finishes required enhancing and protecting their project according to its intended use. | 3 weeks              |
## Enduring Understanding:
Following safety procedures and using personal protective equipment will reduce the risk of injury.

## Essential Questions:
- What are the safety concerns to be considered when working in a lab setting in school or on the job?
- What protection can be used in a laboratory environment?
- What should be part of an effective safety program?
- What characteristics are essential to a functional team?
- What are the benefits of working in a team environment as opposed to individually?

## Unit Goal:
Students will be able to identify and implement proper safety in a work environment, including working as a team.

## Duration of Unit: 3 weeks


<table>
<thead>
<tr>
<th>Guiding / Topical Questions</th>
<th>Content, Themes, Concepts, and Skills</th>
<th>Instructional Resources and Materials</th>
<th>Teaching Strategies</th>
<th>Assessment Strategies</th>
</tr>
</thead>
<tbody>
<tr>
<td>What are the governing bodies that set safety laws?</td>
<td>Safe use of tools, equipment, and machinery.</td>
<td>Lecture</td>
<td>Lecture and class discussion.</td>
<td>Safety Test</td>
</tr>
<tr>
<td>What is personal protective equipment?</td>
<td>Safety signage</td>
<td>PowerPoint presentation on classroom and occupational safety procedures, PPE, and hazardous signage.</td>
<td>PowerPoint presentation on classroom and occupational safety procedures, PPE, and hazardous signage</td>
<td>Signed safety contracts.</td>
</tr>
<tr>
<td>What is chemical safety?</td>
<td>Maximizing personal productivity</td>
<td>Research</td>
<td>OSHA virtual field trip</td>
<td>Student self-assessment of safety procedures</td>
</tr>
<tr>
<td>What is fire safety?</td>
<td></td>
<td>Computer, projector with screen</td>
<td>Practice safe use of tools, equipment, and machinery</td>
<td>Performance test to include safety scenarios and emergency situations</td>
</tr>
<tr>
<td>What are some key characteristics of teamwork?</td>
<td>Model methods for maximizing personal productivity in a safe environment.</td>
<td>School emergency guidelines packet MSDS safety sheet</td>
<td>Implement safety procedures in the classroom.</td>
<td>Create safety posters to be hung around classroom</td>
</tr>
<tr>
<td>What are the advantages of working in groups?</td>
<td></td>
<td></td>
<td>Identify safety signage and the hazard the symbol is warning against.</td>
<td></td>
</tr>
</tbody>
</table>

### Notes from previous lesson.

### Model methods for maximizing personal productivity in a safe environment.

### Model methods for maximizing personal productivity in a safe environment.

### Small group project competition.

### Informal, ongoing, observations of students following safety procedures.

### Suggestions on how to differentiate in this unit:

- 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 and assessment.
- Provide time for revision of work when students show need.
- Teachers may also provide ancillary materials and re-teaching assignments to students who require additional practice on the content, themes, concepts and skills of this unit.
Freehold Regional High School District
Introduction to Woodworking

Unit #2: Materials

Enduring Understandings: The basis for all woodworking materials are found in nature.

Essential Questions:
- What are forest materials?
- How are forest materials produced?
- What are the methods of drying lumber?
- What is the difference between nominal and actual size specifications?
- What are engineered lumber products?
- Why specific forest products are more suited to certain applications than others?
- Why forest products are considered a sustained industry?

Unit Goal: Students will be able to identify and select appropriate materials for their desired product.

Duration of Unit: 3 weeks

NJCCS: 8.2.12.F2

<table>
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<tr>
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<th>Assessment Strategies</th>
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</thead>
<tbody>
<tr>
<td>What are engineered lumber products?</td>
<td>Applications of various sheet goods</td>
<td>Lecture</td>
<td>Lecture and class discussion</td>
<td>Student self assessment</td>
</tr>
<tr>
<td>How is particle board produced?</td>
<td>Characteristics used in lumber and plywood grading systems</td>
<td>Pieces of lumber, plywood, particleboard, Homasote, Masonite etc</td>
<td>Demonstration</td>
<td>Written test</td>
</tr>
<tr>
<td>How is cabinet grade plywood produced and graded?</td>
<td>The use of engineered lumber products</td>
<td>Streaming video clips, virtual fieldtrip</td>
<td>Virtual fieldtrip to lumber mill, forest research lab</td>
<td>Mid term exam</td>
</tr>
<tr>
<td>How is lumber graded for a particular use?</td>
<td>Lumber production</td>
<td>Computer, projector with screen</td>
<td>Streaming video of process of creating sheet goods, veneers, and lumber from logs.</td>
<td>Final exam</td>
</tr>
<tr>
<td>How do we identify different types of lumber?</td>
<td>Hardwoods and softwoods</td>
<td>Analyze applications of various sheet goods</td>
<td>Performance test of material selection for desired purpose</td>
<td>Performance test of material selection for desired purpose</td>
</tr>
<tr>
<td>What is the process of creating usable lumber from logs?</td>
<td>Lumber and plywood grading systems</td>
<td>Identify characteristics used in lumber and plywood grading systems</td>
<td>Final project</td>
<td>Final project</td>
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Suggestions on how to differentiate in this unit:
- 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.
- Teachers may also provide ancillary materials and re-teaching assignments to students who require additional practice on the content, themes, concepts and skills of this unit.
Enduring Understandings: Planning is an essential component to design, construction, material usage, and efficiency.

Essential Questions: Why is planning an important aspect to project work? How does planning influence efficiency? Why is planning vital to material usage and construction? How is the design of a product influenced by planning?

Unit Goal: Students will be able to successfully complete a bill of materials, a plan of procedure, and select appropriate materials for their project.

Duration of Unit: 2 weeks


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<tbody>
<tr>
<td>How does the size of a project influence its design and construction?</td>
<td>Measurement of objects linearly, 2 dimensionally and 3 dimensionally</td>
<td>Lecture</td>
<td>Lecture</td>
<td>Student self assessment</td>
</tr>
<tr>
<td>When planning the project, does the size influence the choice of materials being used?</td>
<td>Planning the steps for completion of the project.</td>
<td>Bill of materials sheet</td>
<td>Class discussion</td>
<td>Unit test</td>
</tr>
<tr>
<td>How does planning the steps necessary for completion of the project help maintain efficiency?</td>
<td>Working drawing</td>
<td>Plan of Procedure sheet(s)</td>
<td>Demonstration</td>
<td>Performance test of material selection for desired purpose</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Sheet stock optimizing paper</td>
<td>Large group guided instruction on form usage</td>
<td>Plan of procedure, Bill of Material, and sheet stock optimization forms</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Calculator, ruler, measurement sheets</td>
<td>Reading a working drawing to attain necessary information for forms</td>
<td>Final project</td>
</tr>
</tbody>
</table>

Suggestions on how to differentiate in this unit:
- 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.
- Teachers may also provide ancillary materials and re-teaching assignments to students who require additional practice on the content, themes, concepts and skills of this unit.
Enduring Understandings: Tools and machinery have specific functions and methods for usage

Essential Questions:  
- What hand tools are used for cutting?  
- What hand tools are used for drilling and boring?  
- What hand tools are used for planing and jointing?  
- What hand tools are used for measuring and drawing?  
- What hand tools are used for sanding?

Unit Goal: Students will be able to properly select and utilize the appropriate hand tools for the necessary task.

Duration of Unit: 8 weeks


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</table>
| Which tools are used for layout and measurement work? | Safe use of tools  
Adjust tool when necessary for higher quality work | Lecture/ Demonstration  
Various tools and scrap lumber for demonstration of techniques  
Current textbook  
Streaming video clips  
T square, Try square, speed square, framing square, bench ruler, tape measure, marking gauge, pencil, awl  
Computer, projector with screen | Lecture and class discussion  
Reading assignment on hand tool usage and safety  
Practice safe use of tools  
Demonstration of proper usage of hand tools.  
Models of various styles of hand tools from pioneer days to modern day hand tools  
Select appropriate tool for task at hand  
Including: variety of squares, variety of planes, variety of saws, drills and bits, and variety of sanders.  
Streaming video  
Virtual fieldtrip to Mercer Museum | Student self assessment  
Safety Test on hand tool usage  
Performance test of material selection for desired purpose  
Performance test on tool selection and proper usage  
Safety rules for hand tool usage in notebook  
Final project |
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<tr>
<td>Which hand tools are used for planing the edges and ends of lumber?</td>
<td>- Sharpening of single edge tools&lt;br&gt;- 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</td>
<td>- Grinding wheel, sharpening stones, oil, rags&lt;br&gt;- Block plane, bench plane, jack plane, fore plane, jointer plane&lt;br&gt;- Lecture/ Demonstration&lt;br&gt;- Scrap lumber for demonstration of techniques&lt;br&gt;- Current textbook&lt;br&gt;- Computer, projector with screen&lt;br&gt;- Streaming video clips</td>
<td>- Lecture and class discussion&lt;br&gt;- Reading assignment on hand tool usage and safety&lt;br&gt;- Practice safe use of tools&lt;br&gt;- Demonstration of proper usage of hand tools&lt;br&gt;- Models of various styles of hand tools from pioneer days to modern day hand tools</td>
<td>- Student self assessment&lt;br&gt;- Safety Test on hand tool usage&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</td>
</tr>
<tr>
<td>Which hand tools are used for cutting lumber?</td>
<td>- 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</td>
<td>- Rip saw, cross cut saw, back saw, coping saw, key hole saw&lt;br&gt;- Lecture/ Demonstration&lt;br&gt;- Scrap lumber for demonstration of techniques&lt;br&gt;- Current textbook&lt;br&gt;- Computer, projector with screen&lt;br&gt;- Streaming video clips</td>
<td>- Select appropriate tool for task at hand&lt;br&gt;- Including: variety of squares, variety of planes, variety of saws, drills and bits, and variety of sanders</td>
<td>- Streaming video&lt;br&gt;- Virtual fieldtrip to Mercer Museum</td>
</tr>
<tr>
<td>Which hand tools are used for drilling and boring holes in stock?</td>
<td>- 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</td>
<td>- Auger bit and brace, hand drill and bits, Gimlet&lt;br&gt;- Lecture/ Demonstration&lt;br&gt;- Scrap lumber for demonstration of techniques&lt;br&gt;- Current textbook&lt;br&gt;- Computer, projector with screen&lt;br&gt;- Streaming video clips</td>
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<tr>
<td>Which hand tool is utilized for sanding the cut and planed pieces?</td>
<td>Practice safe use of tools</td>
<td>Sanding block, sandpaper</td>
<td>Lecture and class discussion</td>
<td>Student self assessment</td>
</tr>
<tr>
<td></td>
<td>Select appropriate tool for task at hand</td>
<td>Lecture/ Demonstration</td>
<td>Reading assignment on hand tool usage and safety</td>
<td>Safety Test on hand tool usage</td>
</tr>
<tr>
<td></td>
<td>Adjust tool when necessary for higher quality work</td>
<td>Scrap lumber for demonstration of techniques</td>
<td>Practice safe use of tools</td>
<td>Performance test of material selection for desired purpose</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Current textbook</td>
<td>Demonstration of proper usage of hand tools.</td>
<td>Performance test on tool selection and proper usage</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Computer, projector with screen</td>
<td>Models of various styles of hand tools from pioneer days to modern day hand tools</td>
<td>Safety rules for hand tool usage in notebook</td>
</tr>
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<td></td>
<td></td>
<td>Streaming video clips</td>
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<td>Final project</td>
</tr>
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</table>

**Suggestions on how to differentiate in this unit:**
- 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.
- Teachers may also provide ancillary materials and re-teaching assignments to students who require additional practice on the content, themes, concepts and skills of this unit.

**Freehold Regional High School District**
**Introduction to Woodworking**
**Unit #5: Joinery / Fasteners**

**Enduring Understandings:** Wood products use a variety of joinery techniques and fastening methods in their assembly.

**Essential Questions:** What are joinery techniques?
What types of mechanical fasteners are used in wood product construction?

What types of glues and adhesives are used in wood product construction?

**Unit Goal:** Students will be able to identify and utilize a variety of joinery techniques using a variety of mechanical fasteners.

**Duration of Unit:** 3 weeks


<table>
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<tr>
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<th>Assessment Strategies</th>
</tr>
</thead>
<tbody>
<tr>
<td>What are joinery techniques?</td>
<td>Utilize appropriate joinery depending upon the application.</td>
<td>Lecture Sample pieces of various joints butt joint, lap joint, dado joint, rabbet joint, miter joint etc Streaming video clips Computer, projector with screen</td>
<td>Lecture and class discussion Demonstration of proper usage, application, and capabilities of various fasteners. Virtual fieldtrip to cabinet shop to show application and creation of various joinery techniques Streaming video of process of creating and using glues, adhesives and mechanical fasteners to connect project pieces Utilize appropriate joinery depending upon the application. Select and utilize appropriate glues and adhesives depending upon application Select and utilize necessary mechanical fasteners depending upon the application</td>
<td>Student self assessment Unit test Written test Performance test of material selection for desired purpose Mid term exam Performance test of proper joinery technique Performance test of appropriate glue and adhesive selection and application Final exam Final project</td>
</tr>
<tr>
<td>What types of glues and adhesives are used in wood product construction?</td>
<td>Select and utilize appropriate glues and adhesive depending upon application</td>
<td>Lecture Sample pieces of various adhesives wood glue, resorcinol glue, polyurethane adhesive, contact cement, hide glue Streaming video clips Computer, projector with screen</td>
<td>Lecture and class discussion Demonstration of proper usage, application, and capabilities of various fasteners. Virtual fieldtrip to cabinet shop to show application and creation of various joinery techniques Streaming video of process of creating and using glues, adhesives and mechanical fasteners to connect project pieces Utilize appropriate joinery depending upon the application. Select and utilize appropriate glues and adhesives depending upon application Select and utilize necessary mechanical fasteners depending upon the application</td>
<td>Student self assessment Unit test Written test Performance test of material selection for desired purpose Mid term exam Performance test of proper joinery technique Performance test of appropriate glue and adhesive selection and application Final exam Final project</td>
</tr>
<tr>
<td>What types of mechanical fasteners are used in wood product construction?</td>
<td>Select and utilize necessary mechanical fasteners depending upon the application</td>
<td>Lecture Examples of various mechanical fasteners nails, screws, dowels, Streaming video clips Computer, projector with screen</td>
<td>Lecture and class discussion Demonstration of proper usage, application, and capabilities of various fasteners. Virtual fieldtrip to cabinet shop to show application and creation of various joinery techniques Streaming video of process of creating and using glues, adhesives and mechanical fasteners to connect project pieces Utilize appropriate joinery depending upon the application. Select and utilize appropriate glues and adhesives depending upon application Select and utilize necessary mechanical fasteners depending upon the application</td>
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**Suggestions on how to differentiate in this unit:**

- 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.
- Teachers may also provide ancillary materials and re-teaching assignments to students who require additional practice on the content, themes, concepts and skills of this unit.
Enduring Understandings: Tools and machinery have specific functions and methods for usage.

Essential Questions:
- What machines are used for cutting?
- What machines are used for drilling and boring?
- What portable power tools and machines are used for routing and shaping?
- What machines are used for planing and jointing?
- What machines are used for sanding?

Unit Goal: Students will be able to properly select and safely utilize the appropriate portable power tool or machine for the task at hand.

Duration of Unit: 9 weeks


<table>
<thead>
<tr>
<th>Guiding / Topical Questions</th>
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<th>Assessment Strategies</th>
</tr>
</thead>
<tbody>
<tr>
<td>Which portable power tools and machines are used for planing the edges, ends and faces of lumber?</td>
<td>Safe use of tools and machines</td>
<td>Machinery and scrap wood to demonstrate techniques</td>
<td>Lecture and class discussion</td>
<td>Student self assessment</td>
</tr>
<tr>
<td>Machinery purpose</td>
<td>Portable power tools and scrap wood to demonstrate techniques</td>
<td></td>
<td>Reading assignment on portable power tool and machinery usage and safety</td>
<td>Safety test</td>
</tr>
<tr>
<td>Jointer</td>
<td>Jointer, surfacer</td>
<td></td>
<td>Demonstration of various power tools that utilize cutting, drilling, boring, routing, shaping, planing, jointing, and sanding.</td>
<td>Performance test of machine/tool selection for desired purpose</td>
</tr>
<tr>
<td>Surfacer</td>
<td>Current textbook</td>
<td></td>
<td>Virtual fieldtrip</td>
<td>Performance test of safe use and operation of tools and machinery</td>
</tr>
<tr>
<td>Adjust tool/machine when necessary for higher quality work</td>
<td>Computer, projector with screen</td>
<td></td>
<td>Streaming video</td>
<td>Final exam</td>
</tr>
<tr>
<td>None</td>
<td>Streaming video clips</td>
<td></td>
<td>Practice safe use of tools and machines</td>
<td>Final project</td>
</tr>
</tbody>
</table>

Which portable power tools and machines are used for cutting lumber?

- Jig saw, band saw, table saw, radial arm saw
- Battery drill, corded drill, drill press, and bits
- Router and cutters

Machinery and scrap wood to demonstrate techniques
Portable power tools and scrap wood to demonstrate techniques
Jig saw, band saw, table saw, radial arm saw
Current textbook
Computer, projector with screen
Streaming video clips

Machinery and scrap wood to demonstrate techniques
Portable power tools and scrap wood to demonstrate techniques
Jig saw, band saw, table saw, radial arm saw
Current textbook
Computer, projector with screen
Streaming video clips

Lecture and class discussion
Reading assignment on portable power tool and machinery usage and safety
Demonstration of various power tools that utilize cutting, drilling, boring, routing, shaping, planing, jointing, and sanding.
Virtual fieldtrip
Streaming video
Practice safe use of tools and machines
Select appropriate tool/machine for task at hand
Utilize machinery for intended purpose
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<tbody>
<tr>
<td>Which portable power tools and machines are used for drilling and boring holes in stock?</td>
<td>Sanders</td>
<td>Machinery and scrap wood to demonstrate techniques&lt;br&gt;Portable power tools and scrap wood to demonstrate techniques&lt;br&gt;Battery drill, corded drill, drill press, and various drills and bits.&lt;br&gt;Current textbook&lt;br&gt;Computer, projector with screen&lt;br&gt;Streaming video clips</td>
<td>Lecture and class discussion&lt;br&gt;Reading assignment on portable power tool and machinery usage and safety&lt;br&gt;Demonstration of various power tools that utilize cutting, drilling, boring, routing, shaping, planing, jointing, and sanding.&lt;br&gt;Virtual fieldtrip&lt;br&gt;Streaming video</td>
<td>Student self assessment&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 exam&lt;br&gt;Final project</td>
</tr>
<tr>
<td>Which portable power tools and machines are used for adding decorative shapes and curves to the edges and ends of stock?</td>
<td>Machinery and scrap wood to demonstrate techniques&lt;br&gt;Portable power tools and scrap wood to demonstrate techniques&lt;br&gt;Routers and assortment of cutters&lt;br&gt;Current textbook&lt;br&gt;Computer, projector with screen&lt;br&gt;Streaming video clips</td>
<td>Lecture&lt;br&gt;Machinery and scrap wood to demonstrate techniques&lt;br&gt;Portable power tools and scrap wood to demonstrate techniques&lt;br&gt;¼ sheet sander, random orbit sander, spindle sander, belt sander, disc sander, portable belt sander and abrasive papers, discs, drums and belts&lt;br&gt;Current textbook&lt;br&gt;Computer, projector with screen&lt;br&gt;Streaming video clips</td>
<td>Practice safe use of tools and machines&lt;br&gt;Select appropriate tool/ machine for task at hand&lt;br&gt;Utilize machinery for intended purpose</td>
<td></td>
</tr>
<tr>
<td>Which portable power tools and machines are utilized for sanding the cut and planed pieces?</td>
<td>License and scrap wood to demonstrate techniques&lt;br&gt;Portable power tools and scrap wood to demonstrate techniques&lt;br&gt;Routers and assortment of cutters&lt;br&gt;Current textbook&lt;br&gt;Computer, projector with screen&lt;br&gt;Streaming video clips</td>
<td>Lecture&lt;br&gt;Machinery and scrap wood to demonstrate techniques&lt;br&gt;Portable power tools and scrap wood to demonstrate techniques&lt;br&gt;¼ sheet sander, random orbit sander, spindle sander, belt sander, disc sander, portable belt sander and abrasive papers, discs, drums and belts&lt;br&gt;Current textbook&lt;br&gt;Computer, projector with screen&lt;br&gt;Streaming video clips</td>
<td>Lecture and class discussion&lt;br&gt;Reading assignment on portable power tool and machinery usage and safety&lt;br&gt;Demonstration of various power tools that utilize cutting, drilling, boring, routing, shaping, planing, jointing, and sanding.&lt;br&gt;Virtual fieldtrip&lt;br&gt;Streaming video</td>
<td>Student self assessment&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 exam&lt;br&gt;Final project</td>
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- 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.
- Teachers may also provide ancillary materials and re-teaching assignments to students who require additional practice on the content, themes, concepts and skills of this unit.
Freehold Regional High School District  
Introduction to Woodworking  
Unit #7: Assembly

**Enduring Understandings:** Methods of construction and assembly determine the difference in strength and quality.

**Essential Questions:**  
- What are the methods of construction and assembly for doors?  
- What are the methods of construction and assembly for table tops?  
- What are the methods of construction and assembly for a wall display cabinet?

**Unit Goal:** Students will be able to properly assemble their pieces into a project using appropriate methodology.

**Duration of Unit:** 3 weeks  

<table>
<thead>
<tr>
<th>Guiding / Topical Questions</th>
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<th>Instructional Resources and Materials</th>
<th>Teaching Strategies</th>
<th>Assessment Strategies</th>
</tr>
</thead>
</table>
| What are the methods of construction and assembly for doors? | Rail and stile construction  
Flat panel  
Solid doors | Lecture notes  
Student handout  
Project pieces prepared for assembly  
Current textbook  
Dowelling jig, dowel pins, battery drill, glue, brush, wet paper towels, bar clamps or pipe clamps  
Computer, projector with screen  
Streaming video clips | Lecture and class discussion  
Reading assignment on methodology of assembling a project  
Demonstration of various assembly jobs using rail and stile construction and glued panel construction  
Virtual fieldtrip – assembly floor of door/window making company  
Streaming video clip | Student self assessment  
Written unit test  
Mid term exam  
Performance test of material selection for desired purpose  
Final exam  
Final project |

What are the methods of construction and assembly for table tops?  
Plywood panel with solid edges  
Tabletop clips and slots in rails  
Screw blocks  
Glued panel construction  

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</tr>
</thead>
</table>
| What are the methods of construction and assembly for table tops? | Glued panel construction  
Plywood panel with solid edges  
Tabletop clips and slots in rails  
Screw blocks | Lecture notes  
Student handout  
Project pieces prepared for assembly  
Current textbook  
Dowelling jig, dowel pins, battery drill, glue, brush, wet paper towels, bar clamps or pipe clamps  
Computer, projector with screen  
Streaming video clips | Lecture and class discussion  
Reading assignment on methodology of assembling a project  
 Demonstration of various assembly jobs using rail and stile construction and glued panel construction  
Virtual fieldtrip – assembly floor of door/window making company  
Streaming video clip | Student self assessment  
Written unit test  
Mid term exam  
Performance test of material selection for desired purpose  
Final exam  
Final project |
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<th>Assessment Strategies</th>
</tr>
</thead>
<tbody>
<tr>
<td>What are the methods of construction and assembly for a wall display cabinet?</td>
<td>Rabbeted back&lt;br&gt; Dadoed shelves&lt;br&gt; Butt joint carcass&lt;br&gt; Rail and stile dowelled door frame</td>
<td>Lecture notes&lt;br&gt; Student handout&lt;br&gt; Project pieces prepared for assembly&lt;br&gt; Current textbook&lt;br&gt; Battery drill, drill bits, screws, glue, router and bit, straight edge, tablesaw, dowelling jig, dowel pins, clamps, hinges&lt;br&gt; Computer, projector with screen&lt;br&gt; Streaming video clips</td>
<td>Lecture and class discussion&lt;br&gt; Reading assignment on methodology of assembling a project&lt;br&gt; Demonstration of various assembly jobs using rail and stile construction and glued panel construction&lt;br&gt; Virtual fieldtrip – assembly floor of door/window making company&lt;br&gt; Streaming video clip</td>
<td>Student self assessment&lt;br&gt; Written unit test&lt;br&gt; Mid term exam&lt;br&gt; Performance test of material selection for desired purpose&lt;br&gt; Final exam&lt;br&gt; Final project</td>
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- 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.
- Teachers may also provide ancillary materials and re-teaching assignments to students who require additional practice on the content, themes, concepts and skills of this unit.
Freehold Regional High School District  
Introduction to Woodworking  
Unit #8: Finishing

**Enduring Understandings:** The type of finish on a wood product will determine its durability and application.

**Essential Questions:**
- What types of finishes would be used for an interior type project?
- What type of finishes would be used for a project exposed to the weather outside?
- What are the types of solvents used in the various finishes?
- Explain the techniques for applying finish to a product.
- What are the procedures for cleaning up after applying finish to a project?

**Unit Goal:** Students will be able to properly select, apply, and cleanup stains and finishes required to enhance and to protect their project according to its intended purpose and use.

**Duration of Unit:** 3 weeks


<table>
<thead>
<tr>
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<th>Assessment Strategies</th>
</tr>
</thead>
<tbody>
<tr>
<td>What types of finishes would be used for an interior type project?</td>
<td>Application of stain, clear wood finish, polyurethane, varnish, French polish, paint.</td>
<td>Lecture</td>
<td>Lecture and class discussion</td>
<td>Student self assessment</td>
</tr>
<tr>
<td>What type of finishes would be used for a project exposed to the weather outside?</td>
<td>Application and cleanup of finishing materials</td>
<td>Current textbook</td>
<td>Question and answer session</td>
<td>Unit test</td>
</tr>
<tr>
<td>What are the types of solvents used in the various finishes?</td>
<td>Solvents</td>
<td>Stain, rags, gloves</td>
<td>Reading assignment on finishes and finishing methodologies</td>
<td>Performance test of material selection, usage and proper cleanup for desired purpose</td>
</tr>
<tr>
<td>Explain the techniques for applying finish to a product.</td>
<td>Safety</td>
<td>Clear Finish, brush, lacquer thinner</td>
<td>Video clips</td>
<td>Final exam</td>
</tr>
<tr>
<td>What are the procedures for cleaning up after applying finish to a project?</td>
<td></td>
<td>Paint, brush,</td>
<td>Demonstration of proper application of finishing products including stain clear wood finish, polyurethane, varnish, French polish, and paint</td>
<td>Final project</td>
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