

# Woods I Unit 1- General Shop Safety (2022)

Content Area: **Applied Tech**  
Course(s): **WOOD I**  
Time Period: **Marking Period 1**  
Length: **1 week (plus a day if needed)**  
Status: **Published**

## Standards

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### Applied Technology Standards

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9.3.12.AC.1	Use vocabulary, symbols and formulas common to architecture and construction.
9.3.12.AC.3	Comply with regulations and applicable codes to establish and manage a legal and safe workplace.
9.3.12.AC-CST.8	Demonstrate the construction crafts required for each phase of a construction project.
9.3.12.AC-CST.9	Safely use and maintain appropriate tools, machinery, equipment and resources to accomplish construction project goals.
12.9.3.MN.6	Demonstrate workplace knowledge and skills common to manufacturing.
12.9.3.MN-HSE.1	Demonstrate the safe use of manufacturing equipment.
12.9.3.MN-HSE.2	Develop safety plans for production processes that meet health, safety and environmental standards.
12.9.3.MN-HSE.3	Demonstrate a safety inspection process to assure a healthy and safe manufacturing environment.
12.9.3.MN-MIR.2	Demonstrate the safe use of manufacturing equipment to ensure a safe and healthy environment.
12.9.3.MN-PRO.5	Demonstrate the safe use of manufacturing equipment.
TECH.9.4.2.CI	Creativity and Innovation
TECH.9.4.2.TL	Technology Literacy

### Transfer Goals and Career Ready Practices

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#### Transfer Goals

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Students will be able to independently use their learning to value the importance of general safety practices in the manufacturing lab so they and their classmates will be safe.

## Concepts

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### Essential Questions

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- How should I go about reporting a safety concern?
- What are some general safety rules?
- What can I do to stay safe?
- What is a major contributing factor to injuries and accidents?
- Why is it important to stay safe in the shop?

### Understandings

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Students have the power to work safely in a shop environment using hand and power tools. Human error is a contributing factor in 90% of all accidents.

### Critical Knowledge and Skills

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#### Knowledge

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Students will know:

- How to properly work in the shop to reduce the risk of injury, during the course of the year.
- How to determine what is safe behavior and what is not.

#### Skills

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Students will be able to:

- Prevent injuries
- Create a safe work environment.

## **Assessment and Resources**

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### **School Formative Assessment Plan (Other Evidence)**

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- participation in class
- quizzes

### **School Summative Assessment Plan**

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The goal of the students is to take the General Shop Safety Test and pass with a 100%.

*If a 100% is not achieved the student will retake the safety test again until 100% is reached.*

### **Primary Resources**

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#### **General Shop Woodworking text book**

Verne C. Fryklund (Author), Arnold J. Le Barge (Author)

#### **Woodworking: Principles and Practice**

Roger W. Cliff (Author)

### **Supplementary Resources**

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Handouts can be found in Student Apps in the Rumaker folder.

## **Technology Integration and Differentiated Instruction**

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## Technology Integration

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- Google Products  
Google Classroom - Used for daily interactions with the students covering a vast majority of different educational resources (Daily Notes, Exit Tickets, Classroom Polls, Quick Checks, Additional Resources/ Support, Homework, etc.)
- **Students will use Google Classroom to take the General Shop Safety Test.**
  
- GAFE (Google Apps For Education) - Using various programs connected with Google to collaborate within the district, co-teachers, grade level partner teacher, and with students to stay connected with the content that is covered within the topic. Used to collect data in real time see results upon completion of the assignments to allow for 21st century learning.
  
- One to One Student laptop
- **Students will create a folder on the student apps drive to submit their work.**

## Differentiated Instruction

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Gifted Students (N.J.A.C.6A:8-3.1)

- Within each lesson, the Gifted Students are to be given the Enrichment Questions.
  - These questions are to extend the knowledge of each portion of the lesson.
- Performance Task
  - Additional practice was provided for students that provided a higher level of thinking for the concepts.

English Language Learners (N.J.A.C.6A:15)

- Within each lesson, the English Language Learners are given three levels of questioning. Each level is

accommodating to the level of learning that the individual student(s) is learning at.

- Beginning
- Intermediate
- Advanced

- All assignments can be created in the student's native language if needed.
- Work with ELL Teacher to allow for all assignments to be completed with extra time.

#### Risk Students (N.J.A.C.6A:8-4.3c)

- Work with the I & RS Team to reach the needs of students.
- Mentors provided
- Offer additional supports as needed (after school help, parent contacts, frequent checks for understanding, etc.)

#### Special Education Students (N.J.A.C.6A:8-3.1)

- Frequent checks for understanding
- Preferred seating assignments
- Hard copy of notes
- Extend the time needed to complete assignments/assessments
- Provide a copy of grading rubrics for projects/labs
- Provide a copy of a model representation for projects
- Clarification of directions/instructions
- Use of technology when appropriate
- Repeat/rephrase instructions as needed

### **Interdisciplinary Connections**

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**MATH – N/a**

**SCIENCE –N/a**

**ELA – N/a**

**SOCIAL STUDIES –N/a**

**WORLD LANGUAGES –N/a**

**VISUAL/PERFORMING ARTS –N/a**

**APPLIED TECHNOLOGY – Students will use their computers to take safety tests, create folders in**

student apps drive, gain access to Classroom period of Google Classroom.

**BUSINESS EDUCATION – N/a**

**GLOBAL AWARENESS – Students will understand that all companies domestic and international use Occupational Safety and Health Administration (OSHA’s) safety prevention techniques to prevent injuries.**

### **Learning Plan / Pacing Guide**

**All week plans are subject to change due to the skill level and work efficiency of the students.**

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#### **Day 1:**

- Introduction to Class
- Student introductions
- About Me

#### **Day 2-3:**

- General Safety Presentation
- Class Rules
- Core Safety Ideas
- Check for understanding

#### **Day 4 (5 if needed):**

- Wrap up general shop safety
- General Safety TEST
- Creation of student folders in student apps
- Tour of Facilities

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# Woods I Unit 2 Hand Tools and Power Tools Safety (2022)

Content Area: **Applied Tech**  
Course(s): **Generic Course, WOOD I**  
Time Period: **Marking Period 1**  
Length: **1 week**  
Status: **Published**

## Standards

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### Applied Technology Standards

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9.3.12.AC.1	Use vocabulary, symbols and formulas common to architecture and construction.
9.3.12.AC.3	Comply with regulations and applicable codes to establish and manage a legal and safe workplace.
9.3.12.AC-CST.8	Demonstrate the construction crafts required for each phase of a construction project.
9.3.12.AC-CST.9	Safely use and maintain appropriate tools, machinery, equipment and resources to accomplish construction project goals.
12.9.3.MN	Manufacturing
12.9.3.MN.3	Comply with federal, state and local regulations to ensure worker safety and health and environmental work practices.
12.9.3.MN-HSE.1	Demonstrate the safe use of manufacturing equipment.
12.9.3.MN-HSE.2	Develop safety plans for production processes that meet health, safety and environmental standards.
12.9.3.MN-HSE.3	Demonstrate a safety inspection process to assure a healthy and safe manufacturing environment.
12.9.3.MN-HSE.6	Conduct job safety and health analysis for manufacturing jobs, equipment and processes.
12.9.3.MN-MIR.2	Demonstrate the safe use of manufacturing equipment to ensure a safe and healthy environment.
12.9.3.MN-MIR.3	Diagnose equipment problems and effectively repair manufacturing equipment.
12.9.3.MN-PRO.2	Manage safe and healthy production working conditions and environmental risks.
12.9.3.MN-PRO.5	Demonstrate the safe use of manufacturing equipment.
12.9.3.MN-QA.5	Perform safety inspections and training to ensure a safe and healthy workplace.

### Transfer Goals and Career Ready Practices

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#### Transfer Goals

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Hand Tools:

- Students will be able to independently use their learning to know the differences in hand tools and small power tools and when to use each one. We will reinforce safety and measuring as they use the tools.

## Power Tools

- Students will be able to independently use their learning to understand the importance of safety and proper use of power tools.

## Concepts

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## Essential Questions

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- How do we use a square to make a straight line?
- How do we use the band saw safely?
- How do we use the drill press safely?
- How do we use the miter saw safely?
- How do you use the disc sander safely?
- How do you use the drill press safely?
- What application does a grinder serve?
- What application is a lathe used for?
- What does a miter saw do?
- What does the band saw do that other tools cannot do?
- What is the disc sander and what operations is it used for?
- What is the mortise and tenon machine used for?
- What is the oscillating spindle sander used for?
- What operations can be performed on the table saw?
- What purpose does a router serve?
- What side of the sander do we use to keep the work piece tight on the table?
- What tool do we use when we cross cut?
- When should we use a push stick?
- Where should you stand when making a cut on the table saw?
- Why are relief cuts important when cutting narrow curves?
- Why do we use a miter saw for cross cutting instead of using the table saw?
- Why is it important to leave some room next to the pencil line?
- Why is the direction of the grain important?



## **Understandings**

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Hand Tools:

- They need to use the right tool for the job because each one has its own purpose. Also, the importance of laying out lines and cutting them correctly.

Power Tools:

- Using power tools makes wood working easier and more accurate but they have the ability to cause severe injuries. They need to be respected and they must be used properly and safely

## **Critical Knowledge and Skills**

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### **Knowledge**

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Students will know:

Hand Tools:

- How to draw a line using a square
- How to drill holes
- How to square an edge
- How to use a back saw
- How to use the disc sander
- How to work safely
- The importance of sanding to a pencil line
- To cut on the waste side of the line

Power Tools:

- How to make a cross-cut on the miter saw.
- How to make properly shape an edge on the router
- How to use the band saw and the techniques to stay safe including where to stand and using relief cuts
- How to use the disc sander safely.
- How to use the drill press to perform various drilling operations
- How to use the grinder safely
- How to use the lathe sander safely
- How to use the miter saw safely
- How to use the mortise and tenon machine.
- How to use the oscillating spindle sander safely.
- How to use the table saw correctly. A tool that is the center piece of the shop.

- The importance of acting in a safe manner around power tools.
- The importance of acting in a safe manner around power tools
- Where to stand when cutting on the table saw.

## **Skills**

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Students will be able to:

Hand Tools:

- Cut a square end on a piece of wood
- Measure a certain amount with a tape measure
- Square an end
- Use the disc sander to square an edge
- Use the drill press to drill holes Work safely with hand tools

Power Tools:

- Cross cut a board on the miter saw
- Cross cut a board on the table saw
- Demonstrate to the instructor that they know how to use the machines correctly during the demo
- Drill several square holes into a piece of stock using the mortise and tenon machine
- Make chisel beads and coves on a cylinder piece of stock on the lathe
- Make relief cuts on the band saw to cut intricate curves.
- Rip a board on the table saw
- Router and edge of a piece of stock
- Sharpen chisels and scrapers using the grinder
- Use the disc sander to sand a flat surface
- Use the drill press to drill holes
- Use the oscillating spindle sander to sand a curved surface
- Use the power tools safely

## **Assessment and Resources**

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### **School Formative Assessment Plan (Other Evidence)**

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- Checks for understanding

- Student test cuts
- Teacher Demo

## **School Summative Assessment Plan**

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The goal of the students is to take the Machine Safety Tests and pass with a 100%.

*If a 100% is not achieved the student will retake the safety test again until 100% is reached.*

## **Primary Resources**

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### **General Shop Woodworking text book**

Verne C. Fryklund (Author), Arnold J. Le Barge (Author)

### **Woodworking: Principles and Practice**

Roger W. Cliff (Author)

## **Supplementary Resources**

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Handouts can be found in Student Apps in the Rumaker folder.

## **Technology Integration and Differentiated Instruction**

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### **Technology Integration**

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- Google Products  
Google Classroom - Used for daily interactions with the students covering a vast majority of different educational resources (Daily Notes, Exit Tickets, Classroom Polls, Quick Checks, Additional Resources/ Support, Homework, etc.)

- **Students will use Google Classroom to take Machine Shop Safety Test**
- GAFE (Google Apps For Education) - Using various programs connected with Google to collaborate within the district, co-teachers, grade level partner teacher, and with students to stay connected with the content that is covered within the topic. Used to collect data in real time see results upon completion of the assignments to allow for 21st century learning.
- One to One Student laptop

All students within the West Deptford School District are given a computer, allowing for 21st century learning to occur within every lesson/topic.

- Additional Support Videos

## **Differentiated Instruction**

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Gifted Students (N.J.A.C.6A:8-3.1)

- Within each lesson, the Gifted Students are to be given the Enrichment Questions.
  - These questions are to extend the knowledge of each portion of the lesson.
- Performance Task
  - Additional practice was provided for students that provided a higher level of thinking for the concepts.

English Language Learners (N.J.A.C.6A:15)

- Within each lesson, the English Language Learners are given three levels of questioning. Each level is accommodating to the level of learning that the individual student(s) is learning at.
  - Beginning
  - Intermediate
  - Advanced
- All assignments can be created in the student's native language if needed.

- Work with ELL Teacher to allow for all assignments to be completed with extra time.

#### Risk Students (N.J.A.C.6A:8-4.3c)

- Work with the I & RS Team to reach the needs of students.
- Mentors provided
- Offer additional supports as needed (after school help, parent contacts, frequent checks for understanding, etc.)

#### Special Education Students (N.J.A.C.6A:8-3.1)

- Frequent checks for understanding
- Preferred seating assignments
- Hard copy of notes
- Extend the time needed to complete assignments/assessments
- Provide a copy of grading rubrics for projects/labs
- Provide a copy of a model representation for projects
- Clarification of directions/instructions
- Use of technology when appropriate
- Repeat/rephrase instructions as needed

### **Interdisciplinary Connections**

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**MATH – N/a**

**SCIENCE –N/a**

**ELA – N/a**

**SOCIAL STUDIES –N/a**

**WORLD LANGUAGES –N/a**

**VISUAL/PERFORMING ARTS –N/a**

**APPLIED TECHNOLOGY – Students will use their computers to take safety tests**

**BUSINESS EDUCATION – N/a**

**GLOBAL AWARENESS – Students will understand that all companies domestic and international use Occupational Safety and Health Administration (OSHA's) safety prevention techniques to prevent injuries.**

## **Learning Plan / Pacing Guide**

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### **Week 1:**

#### Hand Tools

- Listen to a presentation on hand tools
- Participate in a demonstration on cutting
- Cut their own piece of wood to the specifications
- Practice with Sander and Drills
- Layout, drill, sand sample block

#### Power Tools

- Miter Saw Presentation/Demo
- Band Saw/jigsaw Presentation/Demo
- Table Saw Presentation/Demo

### **Week 2:**

#### Power Tools con't

- Lathe Presentation/Demo
- Router Presentation/Demo
- Grinder Presentation/Demo
- Oscillating spindle sander Presentation/Demo
- Mortise and tenon machine Presentation/Demo
- Disc sander presentation/demo
- Safety Test

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# Woods I Unit 3 Measurement and Design (2022)

Content Area: **Applied Tech**  
Course(s): **Generic Course, WOOD I**  
Time Period: **Marking Period 1**  
Length: **~3 weeks**  
Status: **Published**

## Standards

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### Applied Technology Standards

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9.3.12.AC.1	Use vocabulary, symbols and formulas common to architecture and construction.
9.3.12.AC-CST.8	Demonstrate the construction crafts required for each phase of a construction project.
9.3.12.AC-DES	Design/Pre-Construction
9.3.12.AC-DES.6	Apply the techniques and skills of modern drafting, design, engineering and construction to projects.
9.3.12.AC-DES.8	Apply standards, applications and restrictions pertaining to the selection and use of construction materials, components and assemblies in the project design.
CS.9-12.8.2.12.ED.1	Use research to design and create a product or system that addresses a problem and make modifications based on input from potential consumers.
CS.9-12.8.2.12.NT.2	Redesign an existing product to improve form or function.
CS.9-12.ED	Engineering Design
MA.9-12.1.2.12prof.Pr5a	Demonstrate progression in artistic, design, technical, and soft skills, as a result of selecting and fulfilling specified roles in the production of a variety of media artworks.
MA.9-12.1.2.12prof.Pr5b	Develop and refine creativity and adaptability, such as design thinking and risk taking, in addressing identified challenges and constraints within and through media arts productions.
MA.9-12.1.2.12prof.Pr5c	Demonstrate adaptation and innovation through the combination of tools, techniques and content to communicate intent in the production of media artworks.
CAEP.9.2.12.C.1	Review career goals and determine steps necessary for attainment.
TECH.9.4.12.CI	Creativity and Innovation
TECH.9.4.12.CI.1	Demonstrate the ability to reflect, analyze, and use creative skills and ideas (e.g., 1.1.12prof.CR3a).
TECH.9.4.12.CT.1	Identify problem-solving strategies used in the development of an innovative product or practice (e.g., 1.1.12acc.C1b, 2.2.12.PF.3).  Engineering design is a complex process in which creativity, content knowledge, research, and analysis are used to address local and global problems. Decisions on trade-offs involve systematic comparisons of all costs and benefits, and final steps that may involve redesigning for optimization.

### Transfer Goals and Career Ready Practices

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## Transfer Goals

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### Measurement :

- Students will be able to independently use their learning to effectively read a tape measure and be able to measure different pieces of wood. This is important to be able to read a plan and build a project correctly.
- Students will be able to independently use their learning to effectively fill out a bill of materials to properly determine how much material will be needed to complete their projects.

### Design:

- Students will be able to independently use their learning to draw and read plans because this skill is essential to being able to construct projects to specifications. Also, this helps with their visualization skills

## Concepts

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## Essential Questions

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- How do we measure length, width, and thickness?
- How do you draw a 3-view drawing?
- How is the Inch divided?
- How to make a materials list from a 3-view drawing?
- What are different types of lines used for?
- What are the different tools used to measure wood?
- What are the different views of a 3-view drawing?
- What is the equation to equation to calculate board feet?
- Why is accurate dimensioning important?
- Why is it important to draw neatly?
- Why is it important to have a bill of materials?
- Why is it important to know how to read a ruler?

## Understandings

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### Measurement :

- Students will understand that measurements are extremely important in woodworking if they are going to complete projects successfully and to specifications.

- Students will understand they a bill of material are extremely important in woodworking if they are going to complete projects successfully and to specifications.

Design:

- Every project needs a plan. This plan has to be well thought out and clear. Being able see the different views of an object with dimensions is critical to constructing a project.

## **Critical Knowledge and Skills**

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### **Knowledge**

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Students will know...

Measurement:

- How to read a ruler and tape measure and accurately measure and draw lines accurate to 1/16”
- How to complete and read a bill of materials before building a project.
- Know board feet in calculated by  $((\text{length} \times \text{width} \times \text{height})/144) \times \text{the number of pieces}$ .

Design:

- How to draw 3-view orthographic projections
- How to letter a title block.
- How to use dimensions to make a materials list
- How visualize the surfaces of an object in 2-D
- The different views of a drawing

### **Skills**

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Students will be able to...

Measurement:

- Measure a piece of wood and be able to correctly note the length, width, and thickness
- Measure accurately to the nearest 1/16 of an inch
- Fill out bill of materials sheet correctly

- Use the  $((L \times W \times H) / 144) \times \text{number of pieces}$  correctly

Design:

- Draw 3-views of objects
- Find different sides and surfaces of a 3-view drawing
- Read a 3-view drawing with dimensions

## **Assessment and Resources**

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### **School Formative Assessment Plan (Other Evidence)**

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Measurement:

- Accuracy of measurements throughout the year
- Checking for understanding
- Measuring packet
- Bill of materials example

Design:

- Being able to read plans for the rest of the year
- Finding different views
- Formative questions, check for understanding
- Full size drawings
- Listing measurements from a drawing
- Orthographic rough sketches

### **School Summative Assessment Plan**

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Measurement:

Students will complete various assignment sheets that involve measuring and proper fraction reductions

Design:

Students will:

- Complete the required assignment sheets
- Recreate several design examples and will be graded on the accuracy of the drawings.
- Develop these skills so you will be able to read a plan and draw new plans if you choose to do so.
- Create a 3-view drawing of a blocks, students will need to show the top, front, and right side view.
- Create several designs of their own artistic liberty to represent the design task given.
- If a student chooses not to work they will receive a 0.

**A successful result will be a functional product that adheres to the specifications given by the plan. It will be judged by accuracy, attention to detail, finish, and amount of work put into the project.**

**ALL grading is individualized to meet the skill level of each student, students will be graded on their own growth in their skills.**

## **Primary Resources**

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### **General Shop Woodworking text book**

Verne C. Fryklund (Author), Arnold J. Le Barge (Author)

### **Woodworking: Principles and Practice**

Roger W. Cliff (Author)

[www.sketchup.com/learn](http://www.sketchup.com/learn)

## **Supplementary Resources**

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Getting started with SketchUp Parts 1-4

<https://www.sketchup.com/learn/videos/826>

## **Technology Integration and Differentiated Instruction**

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### **Technology Integration**

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- Google Products

Google Classroom - Used for daily interactions with the students covering a vast majority of different educational resources (Daily Notes, Exit Tickets, Classroom Polls, Quick Checks, Additional Resources/ Support, Homework, etc.)

- **Students will use Google SketchUp to design their example projects.**
- GAFE (Google Apps For Education) - Using various programs connected with Google to collaborate within the district, co-teachers, grade level partner teacher, and with students to stay connected with the content that is covered within the topic. Used to collect data in real time see results upon completion of the assignments to allow for 21st century learning.
- One to One Student laptop
- **Students will save all of their design work in their students apps folder and in the H drive**

All students within the West Deptford School District are given a computer, allowing for 21st century learning to occur within every lesson/topic.

- **Getting started with SketchUp Parts 1-4**

<https://www.sketchup.com/learn/videos/826>

## **Differentiated Instruction**

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Gifted Students (N.J.A.C.6A:8-3.1)

- Within each lesson, the Gifted Students are to be given the Enrichment Questions.
  - These questions are to extend the knowledge of each portion of the lesson.
- Performance Task
  - Additional practice was provided for students that provided a higher level of thinking for the concepts.

English Language Learners (N.J.A.C.6A:15)

- Within each lesson, the English Language Learners are given three levels of questioning. Each level is accommodating to the level of learning that the individual student(s) is learning at.
  - Beginning

Intermediate

Advanced

All assignments can be created in the student's native language if needed.

Work with ELL Teacher to allow for all assignments to be completed with extra time.

#### Risk Students (N.J.A.C.6A:8-4.3c)

- Work with the I & RS Team to reach the needs of students.
- Mentors provided
- Offer additional supports as needed (after school help, parent contacts, frequent checks for understanding, etc.)

#### Special Education Students (N.J.A.C.6A:8-3.1)

- Frequent checks for understanding
- Preferred seating assignments
- Hard copy of notes
- Extend the time needed to complete assignments/assessments
- Provide a copy of grading rubrics for projects/labs
- Provide a copy of a model representation for projects
- Clarification of directions/instructions
- Use of technology when appropriate
- Repeat/rephrase instructions as needed

### **Interdisciplinary Connections**

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**MATH – Students will use measuring tools to properly measure real life objects and 3-D objects**

**SCIENCE –N/a**

**ELA – N/a**

**SOCIAL STUDIES –N/a**

**WORLD LANGUAGES –N/a**

**VISUAL/PERFORMING ARTS –N/a**

**APPLIED TECHNOLOGY – Students will use their computers to recreate design worksheets on Google SketchUp and will save them in their H drive and Student Apps drive**

**BUSINESS EDUCATION – Students will use the bill of materials to determine the amount of materials required to complete their projects.**

**GLOBAL AWARENESS – Students will understand that all companies domestic and international use a design software, such as Google SketchUp, AutoCAD, Solidworks, Rino, etc.**

## **Learning Plan / Pacing Guide**

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### **Week 1:**

Measurement:

- Measuring demo
- Measuring Worksheets
- Practical Measuring Activity
- Bill of materials assignment sheets

Design:

- Intro to design and material planning

### **Weeks 2-3:**

Design con't

- Intro to 3-view Drawings
- Presentation on Isometric and Orthographic Projections
- Labeling Sides of a 3-view drawing assignment sheets
- Drawing 3-view drawings
- How to draw Orthographic Projections
- Reading a Plan, Materials List Activity

# Woods I Unit 4 Sanding Block, Candle Holder, Napkin Holder, Cell Phone Speaker, Step Stool, Wooden Bowl (2022)

Content Area: **Applied Tech**  
Course(s): **Generic Course, WOOD I**  
Time Period: **Marking Period 1**  
Length: **~12 weeks Marking periods 1-2**  
Status: **Published**

## Standards

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9.3.12.AC.1	Use vocabulary, symbols and formulas common to architecture and construction.
9.3.12.AC.3	Comply with regulations and applicable codes to establish and manage a legal and safe workplace.
9.3.12.AC-CST.8	Demonstrate the construction crafts required for each phase of a construction project.
9.3.12.AC-CST.9	Safely use and maintain appropriate tools, machinery, equipment and resources to accomplish construction project goals.
9.3.12.AC-DES	Design/Pre-Construction
9.3.12.AC-DES.6	Apply the techniques and skills of modern drafting, design, engineering and construction to projects.
9.3.12.AC-DES.8	Apply standards, applications and restrictions pertaining to the selection and use of construction materials, components and assemblies in the project design.
12.9.3.MN.1	Evaluate the nature and scope of the Manufacturing Career Cluster and the role of manufacturing in society and in the economy.
12.9.3.MN-HSE.1	Demonstrate the safe use of manufacturing equipment.
12.9.3.MN-HSE.2	Develop safety plans for production processes that meet health, safety and environmental standards.
12.9.3.MN-LOG.2	Demonstrate proper handling of products and materials in a manufacturing facility.
12.9.3.MN-MIR.1	Demonstrate maintenance skills and proficient operation of equipment to maximize manufacturing performance.
12.9.3.MN-MIR.2	Demonstrate the safe use of manufacturing equipment to ensure a safe and healthy environment.
12.9.3.MN-PPD.1	Produce quality products that meet manufacturing standards and exceed customer satisfaction.
12.9.3.MN-PPD.5	Develop procedures to create products that meet customer needs.
WRK.9.2.12.CAP.2	Develop college and career readiness skills by participating in opportunities such as structured learning experiences, apprenticeships, and dual enrollment programs.
TECH.9.4.12.CI	Creativity and Innovation
TECH.9.4.12.CI.1	Demonstrate the ability to reflect, analyze, and use creative skills and ideas (e.g., 1.1.12prof.CR3a).
TECH.9.4.12.CT	Critical Thinking and Problem-solving
TECH.9.4.12.CT.1	Identify problem-solving strategies used in the development of an innovative product or practice (e.g., 1.1.12acc.C1b, 2.2.12.PF.3).  Collaboration with individuals with diverse experiences can aid in the problem-solving process, particularly for global issues where diverse solutions are needed.



## **Transfer Goals and Career Ready Practices**

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### **Transfer Goals**

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Students will be able to independently and if needed assistance from fellow students will use their learning to reverse engineer a sanding block, candle holder, napkin holder, cell phone speaker, wooden bowl and step stool. From this reverse engineering they will recreate the projects listed above. The students will build upon skills they have learned from the basic skills taught at the middle school. Once these five projects are completed students will have the liberty starting the next project of the next unit.

### **Concepts**

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### **Essential Questions**

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- How do we measure length, width, and thickness?
- How do you prepare a project for finish?
- How does the speaker produce sound?
- What is the equation to calculate board feet?
- Why do we glue and nail our projects?
- Why is accurate dimensioning important?
- Why is it important to draw neatly?
- Why is it important to have a bill of materials?
- Why is it important to have square ends?
- Why is it important to know how to read a ruler?
- Why is it important to sand correctly?
- Why is it important to wipe off excess glue?
- Why the measurements must be precise?

### **Understandings**

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Students will understand that . . .

The importance of paying attention to detail and to instructions. They will see that measuring, reading, plans

and safety are very important. They will see why it was important to do this when looking at their projects.

## **Critical Knowledge and Skills**

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### **Knowledge**

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Students will know...

- How to finish a project
- How to measure properly
- How to read project blueprints
- How to use problem solving and critical thinking to help them complete their projects
- The different types of sandpaper
- How to properly design their projects
- How to sand to a line
- What to use to make cross cuts
- Why we glue and nail
- Why we set nails
- Why we wipe glue off

### **Skills**

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Students will be able to...

- Glue and use a nail set
- How to properly measure stock for their projects.
- Sand a project with various grits of sandpaper
- Stain and finish
- Transfer dimensions to a piece
- Use a back saw to make a cross cut
- Use problem solving and critical think to finish their projects
- Use the disc sander
- How to use the drill press

## **Assessment and Resources**

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## School Formative Assessment Plan (Other Evidence)

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- Accuracy of cuts
- Proper use of tools
- Exhibiting safety in all aspects
- Gluing up multiple boards
- Guiding students make cuts with the hand tools
- Measuring correctly
- Walking around checking for understanding
- Bill of materials
- Formative questions, check for understanding
- Full size drawings
- Listing measurements from a drawing
- Orthographic rough sketches
- Checking for understanding
- Being able to read plans for the rest of the year
- Accuracy of measurements throughout the year

## School Summative Assessment Plan

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### Project 1:

- Your challenge is to build the sanding block that has been presented.
- You will need to use the skills learned from the demonstrations and apply them to the sanding block.
- The challenge involves being able to think about how a project will go together without seeing each step layout out before you
- You will need to rough cut pieces, cut to final dimensions, assemble, sand, stain, and clear coat by the specified deadline.
- Students are to work individually, but assisting each other to accomplish a finished project is encouraged
- **If a student chooses not to work they will receive a 0.**

### Project 2:

- Your challenge is to build the candle holder that has been presented.
- You will need to use the skills learned building the sanding block and apply them to the candle holder.
- The challenge involves being able to think about how a project will go together without seeing each step layout out before you, as we did with the sanding block.
- You will need to rough cut pieces, cut to final dimensions, assemble, sand, stain, and clear coat by the specified deadline.
- Students are to work individually, but assisting each other to accomplish a finished project is encouraged
- **If a student chooses not to work they will receive a 0.**

### Project 3:

- Your challenge is to build the napkin holder that has been presented.
- You will need to use the skills learned building the candle holder and apply them to the napkin holder.
- The challenge involves being able to think about how a project will go together without seeing each step layout out before you, as we did with the candle holder.
- You will need to rough cut pieces, cut to final dimensions, assemble, sand, stain, and clear coat by the specified deadline.
- Students are to work individually, but assisting each other to accomplish a finished project is encouraged
- **If a student chooses not to work they will receive a 0.**

### Project 4:

- Your challenge is to build the wooden speaker that has been presented.
- You will need to use the skills learned building the napkin holder and apply them to the speaker.
- The challenge involves being able to think about how a project will go together without seeing each step layout out before you, as we did with the napkin holder.
- You will need to rough cut pieces, cut to final dimensions, assemble, sand, stain, and clear coat by the specified deadline.
- Students are to work individually, but assisting each other to accomplish a finished project is encouraged
- **If a student chooses not to work they will receive a 0**

### Project 5:

- Your challenge is to build the step stool that has been presented.
- You will need to use the skills learned building the speaker and apply them to the step stool.
- The challenge involves being able to think about how a project will go together without seeing each step layout out before you, as we did with the speaker .
- You will need to rough cut pieces, cut to final dimensions, assemble, sand, stain, and clear coat by the specified deadline.
- Students are to work individually, but assisting each other to accomplish a finished project is encouraged
- **If a student chooses not to work they will receive a 0.**

### Project 6:

- Your challenge is to build the wooden bowl that has been presented.
- You will need to use the skills learned building the step stool and apply them to the bowl.
- The challenge involves being able to think about how a project will go together without seeing each step layout out before you, as we did with the step stool.
- You will need to rough cut pieces, cut to final dimensions, assemble, sand, stain, and clear coat by the specified deadline.
- Students are to work individually, but assisting each other to accomplish a finished project is encouraged
- **If a student chooses not to work they will receive a 0.**

**A successful result will be functional products that adhere to the specifications given by the plan. It will be judged by accuracy, attention to detail, finish, and amount of work put into the project. All grading**

is individualized for each student.

**ALL grading is individualized to meet the skill level of each student, students will be graded on their own growth in their skills.**

### **Primary Resources**

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#### **General Shop Woodworking text book**

Verne C. Fryklund (Author), Arnold J. Le Barge (Author)

#### **Woodworking: Principles and Practice**

Roger W. Cliff (Author)

[www.sketchup.com/learn](http://www.sketchup.com/learn)

### **Supplementary Resources**

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## **SketchUp Woodworking Tutorial for Beginners - Part 1**

<https://www.youtube.com/watch?v=u80grW1zjOw>

## **SketchUp Woodworking Tutorial for Beginners Part 2 - Copies, Organization, and Curves**

[https://www.youtube.com/watch?v=xJdpbmUnw\\_Y](https://www.youtube.com/watch?v=xJdpbmUnw_Y)

## **Creating and Organizing a Bookcase Model in SketchUp - Tutorials for Woodworkers**

<https://www.youtube.com/watch?v=9-yv70ssrLM>

## **Technology Integration and Differentiated Instruction**

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### **Technology Integration**

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- Google Products  
Google Classroom - Used for daily interactions with the students covering a vast majority of different educational resources (Daily Notes, Exit Tickets, Classroom Polls, Quick Checks, Additional Resources/ Support, Homework, etc.)
- **Students will use Google SketchUp to design their projects.**
- GAFE (Google Apps For Education) - Using various programs connected with Google to collaborate within the district, co-teachers, grade level partner teacher, and with students to stay connected with the content that is covered within the topic. Used to collect data in real time see results upon completion of the assignments to allow for 21st century learning.
- One to One Student laptop
- **Students will save all of their design work in their students apps folder and in the H drive**

All students within the West Deptford School District are given a computer, allowing for 21st century learning to occur within every lesson/topic.

- **SketchUp Woodworking Tutorial for Beginners - Part 1**

<https://www.youtube.com/watch?v=u80grW1zjOw>

**SketchUp Woodworking Tutorial for Beginners Part 2 - Copies, Organization, and Curves**

[https://www.youtube.com/watch?v=xJdpbmUnw\\_Y](https://www.youtube.com/watch?v=xJdpbmUnw_Y)

**Creating and Organizing a Bookcase Model in SketchUp - Tutorials for Woodworkers**

<https://www.youtube.com/watch?v=9-yv70ssrLM>

## **Differentiated Instruction**

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### Gifted Students (N.J.A.C.6A:8-3.1)

- Within each lesson, the Gifted Students are to be given the Enrichment Questions.
  - These questions are to extend the knowledge of each portion of the lesson.
- Performance Task
  - Additional practice was provided for students that provided a higher level of thinking for the concepts.

### English Language Learners (N.J.A.C.6A:15)

- Within each lesson, the English Language Learners are given three levels of questioning. Each level is accommodating to the level of learning that the individual student(s) is learning at.
  - Beginning
  - Intermediate
  - Advanced
- All assignments can be created in the student's native language if needed.
- Work with ELL Teacher to allow for all assignments to be completed with extra time.

### Risk Students (N.J.A.C.6A:8-4.3c)

- Work with the I & RS Team to reach the needs of students.
- Mentors provided
- Offer additional supports as needed (after school help, parent contacts, frequent checks for understanding, etc.)

### Special Education Students (N.J.A.C.6A:8-3.1)

- Frequent checks for understanding
- Preferred seating assignments
- Hard copy of notes
- Extend the time needed to complete assignments/assessments
- Provide a copy of grading rubrics for projects/labs
- Provide a copy of a model representation for projects
- Clarification of directions/instructions
- Use of technology when appropriate

- Repeat/rephrase instructions as needed

## **Interdisciplinary Connections**

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### **MATH –**

- **Students will use measuring tools to properly measure real life objects and 3-D objects**

### **SCIENCE –N/a**

### **ELA – N/a**

### **SOCIAL STUDIES –N/a**

### **WORLD LANGUAGES –N/a**

### **VISUAL/PERFORMING ARTS –N/a**

### **APPLIED TECHNOLOGY –**

- **Students will use their computers to reverse engineer a design on Google SketchUp and will save them in their H drive and Student Apps drive.**
- **Students will use their computers to watch tutorials to assist them in understanding Google SketchUp and how to properly use the program.**

### **BUSINESS EDUCATION –**

- **Students will use the bill of materials to determine the amount of materials required to complete their projects.**

### **GLOBAL AWARENESS –**

- **Students will understand that all companies domestic and international use a design software, such as Google SketchUp, AutoCAD, Solidworks, Rino, etc.**
- **Students will understand that all companies domestic and international use Occupational Safety and Health Administration (OSHA's) safety prevention techniques to prevent injuries.**

## **Learning Plan / Pacing Guide**

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**Work on the sanding block, step stool, speaker will include:**

- **Less linear project work, the students are free to work and test their abilities**
- **Focus for the upcoming weeks is to apply the skills learned in the middle school and use them to build the required projects listed above.**
- **Also look for teachable moments during the work weeks.**



**More emphasis will be placed on following as each students skills progress:**

- **Sanding**
- **Accurate Measurements**
- **Precision in assembly**
- **Gluing and excess glue removal**
- **Staining**
- **Clear coating**
- **Problem solving**
- **Critical thinking**
- **Independent thinking**
- **Project planning**

**All week plans are subject to change due to the skill level and work efficiency of the students.**

**Week 1 of project:**

- **Design project on Google SketchUp**
- **Submit design on Google Classroom**

**Weeks 2-to end of project**

- **Create project to replicate instructor's model.**
- **Submit project for grading**
- **Design next project on Google SketchUp**

**Approximate time tables for projects:**

1. **Sanding Block (~1 week)**
2. **Candle Holder (~1.5 weeks)**
3. **Napkin Holder (~2.5 weeks)**
4. **Speaker (~3 weeks)**
5. **Step Stool(~3 weeks)**
6. **Wooden Bowl (~1 week)**

# Woods I Unit 5 Bird Feeder, Picture Frame, Serving Tray (2022)

Content Area: **Applied Tech**  
Course(s): **Generic Course, WOOD I**  
Time Period: **Marking Period 2**  
Length: **~15 weeks Marking periods 2-3**  
Status: **Published**

## Standards

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9.3.12.AC.1	Use vocabulary, symbols and formulas common to architecture and construction.
9.3.12.AC-CST.8	Demonstrate the construction crafts required for each phase of a construction project.
9.3.12.AC-DES	Design/Pre-Construction
9.3.12.AC-DES.6	Apply the techniques and skills of modern drafting, design, engineering and construction to projects.
9.3.12.AC-DES.8	Apply standards, applications and restrictions pertaining to the selection and use of construction materials, components and assemblies in the project design.
12.9.3.MN.1	Evaluate the nature and scope of the Manufacturing Career Cluster and the role of manufacturing in society and in the economy.
12.9.3.MN-HSE.1	Demonstrate the safe use of manufacturing equipment.
12.9.3.MN-HSE.2	Develop safety plans for production processes that meet health, safety and environmental standards.
12.9.3.MN-LOG.2	Demonstrate proper handling of products and materials in a manufacturing facility.
12.9.3.MN-MIR.1	Demonstrate maintenance skills and proficient operation of equipment to maximize manufacturing performance.
12.9.3.MN-MIR.2	Demonstrate the safe use of manufacturing equipment to ensure a safe and healthy environment.
12.9.3.MN-MIR.6	Implement an effective, predictive and preventive manufacturing equipment maintenance program.
12.9.3.MN-PPD.4	Implement continuous improvement processes in order to maintain quality within manufacturing production.
WRK.9.2.12.CAP.2	Develop college and career readiness skills by participating in opportunities such as structured learning experiences, apprenticeships, and dual enrollment programs.
TECH.9.4.12.CI	Creativity and Innovation
TECH.9.4.12.CI.1	Demonstrate the ability to reflect, analyze, and use creative skills and ideas (e.g., 1.1.12prof.CR3a).
TECH.9.4.12.CI.3	Investigate new challenges and opportunities for personal growth, advancement, and transition (e.g., 2.1.12.PGD.1).
TECH.9.4.12.CT	Critical Thinking and Problem-solving
TECH.9.4.12.CT.1	Identify problem-solving strategies used in the development of an innovative product or practice (e.g., 1.1.12acc.C1b, 2.2.12.PF.3).

## Transfer Goals and Career Ready Practices

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## **Transfer Goals**

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Students will be able to independently and if needed assistance from fellow students will use their learning to reverse engineer a bird feeder, picture frame, and serving tray. From this reverse engineering they will then from their design they will recreate the bird feeder, picture frame, and serving tray. The students will build upon skills they have learned while making their previous project. Once these three projects are completed students will have the liberty starting the next project of the next unit.

## **Concepts**

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## **Essential Questions**

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- How deep is a counterbore hole?
- What is a counterbore hole?
- What is a countersunk hole?
- How do we measure length, width, and thickness?
- How do you prepare a project for finish?
- How does the speaker produce sound?
- What direction do you want the wooden plug to be facing?
- What is a pilot hole?
- What is the equation to calculate board feet?
- Which do we route first end or side grain?
- Why do we glue and nail our projects?
- Why is accurate dimensioning important?
- Why is it important to draw neatly?
- Why is it important to have a bill of materials?
- Why is it important to have square ends?
- Why is it important to know how to read a ruler?
- Why is it important to sand correctly?
- Why is it important to wipe off excess glue?
- Why the measurements must be precise?
- • Why would you rather use the table saw to make a rip cut rather than the bandsaw?

## **Understandings**

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Students will understand that . . .

The importance of paying attention to detail and to instructions. They will see that measuring, reading, plans and safety are very important. They will see why it was important to do this when looking at their projects.

## **Critical Knowledge and Skills**

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### **Knowledge**

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Students will know...

- How to finish a project
- How to measure properly
- How to read project blueprints
- How to use problem solving and critical thinking to help them complete their projects
- The different types of sandpaper
- How to properly design their projects
- How to sand to a line
- What to use to make cross cuts
- Why we glue and nail
- Why we set nails
- Why we wipe glue off

### **Skills**

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Students will be able to...

- Glue and use a nail set
- How to properly measure stock for their projects.
- Sand a project with various grits of sandpaper
- Stain and finish
- Transfer dimensions to a piece
- Use a back saw to make a cross cut
- Use problem solving and critical think to finish their projects
- Use the disc sander
- How to use the drill press

## Assessment and Resources

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### School Formative Assessment Plan (Other Evidence)

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- Accuracy of cuts
- Proper use of tools
- Exhibiting safety in all aspects
- Gluing up multiple boards
- Guiding students make cuts with the hand tools
- Measuring correctly
- Walking around checking for understanding
- Bill of materials
- Formative questions, check for understanding
- Full size drawings
- Listing measurements from a drawing
- Orthographic rough sketches
- Checking for understanding
- Being able to read plans for the rest of the year
- Accuracy of measurements throughout the year

### School Summative Assessment Plan

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#### Project 1:

- Your challenge is to build the bird feeder that has been presented.
- You will need to use the skills learned from the demonstrations and apply them to this project.
- The challenge involves being able to think about how a project will go together without seeing each step layout out before you
- You will need to rough cut pieces, cut to final dimensions, assemble, sand, stain, and clear coat by the specified deadline.
- Students are to work individually, but assisting each other to accomplish a finished project is encouraged.
- **If a student chooses not to work they will receive a 0.**

#### Project 2:

- Your challenge is to build the picture frame that has been presented.
- You will need to use the skills learned building the wall shelf and apply them to the new project.
- The challenge involves being able to think about how a project will go together without seeing each step layout out before you, as we did with the wall shelf.
- You will need to rough cut pieces, cut to final dimensions, assemble, sand, stain, and clear coat by the specified deadline.
- Students are to work individually, but assisting each other to accomplish a finished project is

encouraged.

- **If a student chooses not to work they will receive a 0.**

### **Project 3:**

- Your challenge is to build the serving tray that has been presented.
- You will need to use the skills learned building the wall shelf and apply them to the new project.
- The challenge involves being able to think about how a project will go together without seeing each step layout out before you, as we did with the wall shelf.
- You will need to rough cut pieces, cut to final dimensions, assemble, sand, stain, and clear coat by the specified deadline.
- Students are to work individually, but assisting each other to accomplish a finished project is encouraged.
- **If a student chooses not to work they will receive a 0.**

**A successful result will be functional products that adhere to the specifications given by the plan. It will be judged by accuracy, attention to detail, finish, and amount of work put into the project.**

**ALL grading is individualized to meet the skill level of each student, students will be graded on their own growth in their skills.**

### **Primary Resources**

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#### **General Shop Woodworking text book**

Verne C. Fryklund (Author), Arnold J. Le Barge (Author)

#### **Woodworking: Principles and Practice**

Roger W. Cliff (Author)

[www.sketchup.com/learn](http://www.sketchup.com/learn)

### **Supplementary Resources**

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## **Creating and Organizing a Bookcase Model in SketchUp - Tutorials for Woodworkers**

<https://www.youtube.com/watch?v=9-yv70ssrLM>

## Technology Integration and Differentiated Instruction

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### Technology Integration

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- Google Products  
Google Classroom - Used for daily interactions with the students covering a vast majority of different educational resources (Daily Notes, Exit Tickets, Classroom Polls, Quick Checks, Additional Resources/ Support, Homework, etc.)
- **Students will use Google SketchUp to design their projects.**
- GAFE (Google Apps For Education) - Using various programs connected with Google to collaborate within the district, co-teachers, grade level partner teacher, and with students to stay connected with the content that is covered within the topic. Used to collect data in real time see results upon completion of the assignments to allow for 21st century learning.
- One to One Student laptop
- **Students will save all of their design work in their students apps folder and in the H drive**

All students within the West Deptford School District are given a computer, allowing for 21st century learning to occur within every lesson/topic.

- **Creating and Organizing a Bookcase Model in SketchUp - Tutorials for Woodworkers**

<https://www.youtube.com/watch?v=9-yv70ssrLM>

### Differentiated Instruction

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Gifted Students (N.J.A.C.6A:8-3.1)

- Within each lesson, the Gifted Students are to be given the Enrichment Questions.
  - These questions are to extend the knowledge of each portion of the lesson.
- Performance Task
  - Additional practice was provided for students that provided a higher level of thinking for the

concepts.

#### English Language Learners (N.J.A.C.6A:15)

- Within each lesson, the English Language Learners are given three levels of questioning. Each level is accommodating to the level of learning that the individual student(s) is learning at.

Beginning

Intermediate

Advanced

All assignments can be created in the student's native language if needed.

Work with ELL Teacher to allow for all assignments to be completed with extra time.

#### Risk Students (N.J.A.C.6A:8-4.3c)

- Work with the I & RS Team to reach the needs of students.
- Mentors provided
- Offer additional supports as needed (after school help, parent contacts, frequent checks for understanding, etc.)

#### Special Education Students (N.J.A.C.6A:8-3.1)

- Frequent checks for understanding
- Preferred seating assignments
- Hard copy of notes
- Extend the time needed to complete assignments/assessments
- Provide a copy of grading rubrics for projects/labs
- Provide a copy of a model representation for projects
- Clarification of directions/instructions
- Use of technology when appropriate
- Repeat/rephrase instructions as needed

### **Interdisciplinary Connections**

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#### **MATH –**

- **Students will use measuring tools to properly measure real life objects and 3-D objects**

#### **SCIENCE –N/a**



**ELA – N/a**

**SOCIAL STUDIES –N/a**

**WORLD LANGUAGES –N/a**

**VISUAL/PERFORMING ARTS –N/a**

**APPLIED TECHNOLOGY –**

- **Students will use their computers to reverse engineer a design on Google SketchUp and will save them in their H drive and Student Apps drive.**
- **Students will use their computers to watch tutorials to assist them in understanding Google SketchUp and how to properly use the program.**

**BUSINESS EDUCATION –**

- **Students will use the bill of materials to determine the amount of materials required to complete their projects.**

**GLOBAL AWARENESS –**

- **Students will understand that all companies domestic and international use a design software, such as Google SketchUp, AutoCAD, Solidworks, Rino, etc.**
- **Students will understand that all companies domestic and international use Occupational Safety and Health Administration (OSHA's) safety prevention techniques to prevent injuries.**

## **Learning Plan / Pacing Guide**

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**Work on the wall shelf, and end table will include:**

- **Less linear project work, the students are free to work and test their abilities**
- **Focus for the upcoming weeks is to apply the skills learned in the middle school and use them to build the required projects listed above.**
- **Also look for teachable moments during the work weeks.**

**More emphasis will be placed on following as each students skills progress:**

- **Sanding**
- **Accurate Measurements**
- **Precision in assembly**
- **Gluing and excess glue removal**
- **Staining**
- **Clear coating**
- **Problem solving**
- **Critical thinking**
- **Independent thinking**
- **Project planning**

**All week plans are subject to change due to the skill level and work efficiency of the students.**

**Weeks 1-7:**

- **Design wall shelf on Google SketchUp**
- **Create wall shelf to replicate instructor's model.**
- **Submit wall shelf for grading**
- **Design end table on Google SketchUp**

**Weeks 6-14 and 15 if needed:**

- **Create end table to replicate instructor's model.**
- **Stain projects**
- **Clear coat projects**
- **Submit end table for grading**

# Woods I Unit 6 Toilet Paper Holder, Magazine Rack, End Table (2022)

Content Area: **Applied Tech**  
Course(s): **Generic Course, WOOD I**  
Time Period: **Marking Period 3**  
Length: **~10 weeks Marking Periods 3-4**  
Status: **Published**

## Standards

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9.3.12.AC.1	Use vocabulary, symbols and formulas common to architecture and construction.
9.3.12.AC-CST.8	Demonstrate the construction crafts required for each phase of a construction project.
9.3.12.AC-DES	Design/Pre-Construction
9.3.12.AC-DES.6	Apply the techniques and skills of modern drafting, design, engineering and construction to projects.
9.3.12.AC-DES.8	Apply standards, applications and restrictions pertaining to the selection and use of construction materials, components and assemblies in the project design.
12.9.3.MN.1	Evaluate the nature and scope of the Manufacturing Career Cluster and the role of manufacturing in society and in the economy.
12.9.3.MN-HSE.1	Demonstrate the safe use of manufacturing equipment.
12.9.3.MN-HSE.2	Develop safety plans for production processes that meet health, safety and environmental standards.
12.9.3.MN-LOG.2	Demonstrate proper handling of products and materials in a manufacturing facility.
12.9.3.MN-MIR.1	Demonstrate maintenance skills and proficient operation of equipment to maximize manufacturing performance.
12.9.3.MN-MIR.2	Demonstrate the safe use of manufacturing equipment to ensure a safe and healthy environment.
12.9.3.MN-PPD.1	Produce quality products that meet manufacturing standards and exceed customer satisfaction.
12.9.3.MN-PPD.5	Develop procedures to create products that meet customer needs.
WRK.9.2.12.CAP.2	Develop college and career readiness skills by participating in opportunities such as structured learning experiences, apprenticeships, and dual enrollment programs.
TECH.9.4.12.CI	Creativity and Innovation
TECH.9.4.12.CI.1	Demonstrate the ability to reflect, analyze, and use creative skills and ideas (e.g., 1.1.12prof.CR3a).
TECH.9.4.12.CT.1	Identify problem-solving strategies used in the development of an innovative product or practice (e.g., 1.1.12acc.C1b, 2.2.12.PF.3).

## Transfer Goals and Career Ready Practices

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### Transfer Goals

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Students will be able to independently and if needed assistance from fellow students will use their learning

to reverse engineer a toilet paper holder, magazine rack, and a end table. From this reverse engineering they will then from their design they will recreate the projects listed above. The students will build upon skills they have learned while making their previous project. Once these three projects are completed students will have the liberty starting the next project of the next unit.

## Concepts

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## Essential Questions

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- How deep is a counterbore hole?
- What is a counterbore hole?
- What is a countersunk hole?
- Why would you rather use the table saw to make a rip cut rather than the bandsaw?
- How do we measure length, width, and thickness?
- How do you prepare a project for finish?
- How does the speaker produce sound?
- What direction do you want the wooden plug to be facing?
- What is a pilot hole?
- What is the equation to calculate board feet?
- Which do we route first end or side grain?
- Why do we glue and nail our projects?
- Why is a dado/rabbit cut better than a regular butt joint?
- Why is accurate dimensioning important?
- Why is it important to draw neatly?
- Why is it important to have a bill of materials?
- Why is it important to have square ends?
- Why is it important to know how to read a ruler?
- Why is it important to sand correctly?
- Why is it important to wipe off excess glue?
- Why the measurements must be precise?

## Understandings

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Students will understand that . . .

The importance of paying attention to detail and to instructions. They will see that measuring, reading, plans

and safety are very important. They will see why it was important to do this when looking at their projects.

## **Critical Knowledge and Skills**

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### **Knowledge**

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Students will know...

- How to finish a project
- How to measure properly
- How to read project blueprints
- How to use problem solving and critical thinking to help them complete their projects
- The different types of sandpapers
- How to properly design their projects
- How to sand to a line
- What to use to make cross cuts
- Why we glue and nail
- Why we set nails
- Why we wipe glue off
- Glue boards together to make a bowl
- Use proper cabinet making techniques to create the toilet paper holder
- Proper use of a dado/rabbit cuts.

### **Skills**

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Students will be able to...

- Glue and use a nail set
- How to properly measure stock for their projects.
- Sand a project with various grits of sandpaper
- Stain and finish
- Transfer dimensions to a piece
- Use a back saw to make a cross cut
- Use problem solving and critical think to finish their projects
- Use the disc sander
- How to use the drill press
- Cut dado/rabbit joints

## Assessment and Resources

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### School Formative Assessment Plan (Other Evidence)

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- Accuracy of cuts
- Proper use of tools
- Exhibiting safety in all aspects
- Gluing up multiple boards
- Guiding students make cuts with the hand tools
- Measuring correctly
- Walking around checking for understanding
- Bill of materials
- Formative questions, check for understanding
- Full size drawings
- Listing measurements from a drawing
- Orthographic rough sketches
- Checking for understanding
- Being able to read plans for the rest of the year
- Accuracy of measurements throughout the year

### School Summative Assessment Plan

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#### Project 1:

- Your challenge is to build the toilet paper holder that has been presented.
- You will need to use the skills learned from the picture frame and apply them to this project.
- The challenge involves being able to think about how a project will go together without seeing each step layout out before you, as we did with the picture frame.
- You will need to rough cut pieces, cut to final dimensions, assemble, sand, stain, and clear coat by the specified deadline.
- Students are to work individually, but assisting each other to accomplish a finished project is encouraged
- **If a student chooses not to work they will receive a 0.**

#### Project 2:

- Your challenge is to build the magazine rack that has been presented.
- You will need to use the skills learned from the toilet paper holder and apply them to this project.
- The challenge involves being able to think about how a project will go together without seeing each step layout out before you, as we did with the toilet paper holder.
- You will need to rough cut pieces, cut to final dimensions, assemble, sand, stain, and clear coat by the specified deadline.
- Students are to work individually, but assisting each other to accomplish a finished project is encouraged

- **If a student chooses not to work they will receive a 0.**

### **Project 3:**

- Your challenge is to build the end table that has been presented.
- You will need to use the skills learned from the magazine rack and apply them to this project.
- The challenge involves being able to think about how a project will go together without seeing each step layout out before you, as we did with the magazine rack.
- You will need to rough cut pieces, cut to final dimensions, assemble, sand, stain, and clear coat by the specified deadline.
- Students are to work individually, but assisting each other to accomplish a finished project is encouraged
- **If a student chooses not to work they will receive a 0.**

**A successful result will be functional products that adhere to the specifications given by the plan. It will be judged by accuracy, attention to detail, finish, and amount of work put into the project.**

**ALL grading is individualized to meet the skill level of each student, students will be graded on their own growth in their skills.**

### **Primary Resources**

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#### **General Shop Woodworking text book**

Verne C. Fryklund (Author), Arnold J. Le Barge (Author)

#### **Woodworking: Principles and Practice**

Roger W. Cliff (Author)

[www.sketchup.com/learn](http://www.sketchup.com/learn)

### **Supplementary Resources**

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### **Technology Integration and Differentiated Instruction**

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## **Differentiated Instruction**

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### Gifted Students (N.J.A.C.6A:8-3.1)

- Within each lesson, the Gifted Students are to be given the Enrichment Questions.
  - These questions are to extend the knowledge of each portion of the lesson.
- Performance Task
  - Additional practice was provided for students that provided a higher level of thinking for the concepts.

### English Language Learners (N.J.A.C.6A:15)

- Within each lesson, the English Language Learners are given three levels of questioning. Each level is accommodating to the level of learning that the individual student(s) is learning at.
  - Beginning
  - Intermediate
  - Advanced
- All assignments can be created in the student's native language if needed.
- Work with ELL Teacher to allow for all assignments to be completed with extra time.

### Risk Students (N.J.A.C.6A:8-4.3c)

- Work with the I & RS Team to reach the needs of students.
- Mentors provided
- Offer additional supports as needed (after school help, parent contacts, frequent checks for understanding, etc.)

### Special Education Students (N.J.A.C.6A:8-3.1)

- Frequent checks for understanding
- Preferred seating assignments
- Hard copy of notes
- Extend the time needed to complete assignments/assessments
- Provide a copy of grading rubrics for projects/labs
- Provide a copy of a model representation for projects
- Clarification of directions/instructions
- Use of technology when appropriate
- Repeat/rephrase instructions as needed



## **Interdisciplinary Connections**

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### **MATH –**

- **Students will use measuring tools to properly measure real life objects and 3-D objects**

### **SCIENCE –N/a**

### **ELA – N/a**

### **SOCIAL STUDIES –N/a**

### **WORLD LANGUAGES –N/a**

### **VISUAL/PERFORMING ARTS –N/a**

### **APPLIED TECHNOLOGY –**

- **Students will use their computers to reverse engineer a design on Google SketchUp and will save them in their H drive and Student Apps drive.**
- **Students will use their computers to watch tutorials to assist them in understanding Google SketchUp and how to properly use the program.**

### **BUSINESS EDUCATION –**

- **Students will use the bill of materials to determine the amount of materials required to complete their projects.**

### **GLOBAL AWARENESS –**

- **Students will understand that all companies domestic and international use a design software, such as Google SketchUp, AutoCAD, Solidworks, Rino, etc.**
- **Students will understand that all companies domestic and international use Occupational Safety and Health Administration (OSHA's) safety prevention techniques to prevent injuries.**

## **Learning Plan / Pacing Guide**

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**Work on the toilet paper holder and wooden bowl will include:**

- **Less linear project work, the students are free to work and test their abilities**
- **Focus for the upcoming weeks is to apply the skills learned in the middle school and use them to build the required projects listed above.**
- **Also look for teachable moments during the work weeks.**

**More emphasis will be placed on following as each students skills progress:**

- **Sanding**
- **Accurate Measurements**

- **Precision in assembly**
- **Gluing and excess glue removal**
- **Staining**
- **Clear coating**
- **Problem solving**
- **Critical thinking**
- **Independent thinking**
- **Project planning**

**All week plans are subject to change due to the skill level and work efficiency of the students.**

**Week 1-11: (Each project should last approximately 3 weeks)**

- **Design project on Google SketchUp**
- **Create project to replicate instructor's model.**
- **Submit project for grading**
- **Design next project on Google SketchUp**

# Woods I Unit 7 (If needed) Personal Project (2022)

Content Area: **Applied Tech**  
Course(s): **Generic Course, WOOD I**  
Time Period: **Marking Period 4**  
Length: **~9 Weeks**  
Status: **Published**

## Standards

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9.3.12.AC.1	Use vocabulary, symbols and formulas common to architecture and construction.
9.3.12.AC-CST.8	Demonstrate the construction crafts required for each phase of a construction project.
9.3.12.AC-DES	Design/Pre-Construction
9.3.12.AC-DES.6	Apply the techniques and skills of modern drafting, design, engineering and construction to projects.
9.3.12.AC-DES.8	Apply standards, applications and restrictions pertaining to the selection and use of construction materials, components and assemblies in the project design.
12.9.3.MN.1	Evaluate the nature and scope of the Manufacturing Career Cluster and the role of manufacturing in society and in the economy.
12.9.3.MN-HSE.1	Demonstrate the safe use of manufacturing equipment.
12.9.3.MN-HSE.2	Develop safety plans for production processes that meet health, safety and environmental standards.
12.9.3.MN-LOG.2	Demonstrate proper handling of products and materials in a manufacturing facility.
12.9.3.MN-MIR.1	Demonstrate maintenance skills and proficient operation of equipment to maximize manufacturing performance.
12.9.3.MN-MIR.2	Demonstrate the safe use of manufacturing equipment to ensure a safe and healthy environment.
12.9.3.MN-PPD.1	Produce quality products that meet manufacturing standards and exceed customer satisfaction.
12.9.3.MN-PPD.5	Develop procedures to create products that meet customer needs.
WRK.9.2.12.CAP.2	Develop college and career readiness skills by participating in opportunities such as structured learning experiences, apprenticeships, and dual enrollment programs.
TECH.9.4.12.CI	Creativity and Innovation
TECH.9.4.12.CI.1	Demonstrate the ability to reflect, analyze, and use creative skills and ideas (e.g., 1.1.12prof.CR3a).
TECH.9.4.12.CT.1	Identify problem-solving strategies used in the development of an innovative product or practice (e.g., 1.1.12acc.C1b, 2.2.12.PF.3).

## Transfer Goals and Career Ready Practices

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### Transfer Goals

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Students will be able to independently use their learning to choice of which project they will want to make with in reason\*. They will build upon and utilize the skills learned they have gained building the required

projects from the previous units.

\* = Within reason means, that they student may build any project that they want within or at their ability level, which is determined by the quality of the students previous projects. (Woods 1 Projects)

## Concepts

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## Essential Questions

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- How deep is a counterbore hole?
- What is a counterbore hole?
- What is a countersunk hole?
- Why would you rather use the table saw to make a rip cut rather than the bandsaw?
- How do we measure length, width, and thickness?
- How do you prepare a project for finish?
- How does the speaker produce sound?
- What direction do you want the wooden plug to be facing?
- What is a pilot hole?
- What is the equation to calculate board feet?
- Which do we route first end or side grain?
- Why do we glue and nail our projects?
- Why is a dado/rabbit cut better than a regular butt joint?
- Why is accurate dimensioning important?
- Why is it important to draw neatly?
- Why is it important to have a bill of materials?
- Why is it important to have square ends?
- Why is it important to know how to read a ruler?
- Why is it important to sand correctly?
- Why is it important to wipe off excess glue?
- Why the measurements must be precise?

## Understandings

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Students will understand that . . .

The importance of paying attention to detail and to instructions. They will see that measuring, reading, plans and safety are very important. They will see why it was important to do this when looking at their projects.

## **Critical Knowledge and Skills**

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### **Knowledge**

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Students will know...

- How to finish a project
- How to measure properly
- How to read project blueprints
- How to use problem solving and critical thinking to help them complete their projects
- The different types of sandpapere
- How to proprly design their projects
- How to sand to a line
- What to use to make cross cuts
- Why we glue and nail
- Why we set nails
- Why we wipe glue off
- Glue boards together to make a bowl
- Use proper cabinet making techniques to create the toilet paper holder
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### **Skills**

---

Students will be able to...

- Glue and use a nail set
- How to properly measure stock for their projects.
- Sand a project with various grits of sandpaper
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- Cut dado/rabbit joints

## **Assessment and Resources**

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### **School Formative Assessment Plan (Other Evidence)**

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- Accuracy of cuts
- Proper use of tools
- Exhibiting safety in all aspects
- Gluing up multiple boards
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- Orthographic rough sketches
- Checking for understanding
- Being able to read plans for the rest of the year
- Accuracy of measurements throughout the year

### **School Summative Assessment Plan**

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#### **Project 1:**

- Your challenge is to design and build a personal project from your own research and interest.
- You will need to use the skills learned from your past wood shop projects.
- The challenge involves being able to think about how a project will go together without seeing each step layout out before you, as we did with your previous projects.
- You will need to rough cut pieces, cut to final dimensions, assemble, sand, stain, and clear coat by the specified deadline.
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## **Supplementary Resources**

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Personal project ideas are located in Student Apps in the Rumaker folder.

## **Technology Integration and Differentiated Instruction**

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### **Technology Integration**

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- Google Products  
Google Classroom - Used for daily interactions with the students covering a vast majority of different educational resources (Daily Notes, Exit Tickets, Classroom Polls, Quick Checks, Additional Resources/ Support, Homework, etc.)
- **Students will use Google SketchUp to design their projects.**
- GAFE (Google Apps For Education) - Using various programs connected with Google to collaborate within the district, co-teachers, grade level partner teacher, and with students to stay connected with the content that is covered within the topic. Used to collect data in real time see results upon completion of the assignments to allow for 21st century learning.
- One to One Student laptop
- **Students will save all of their design work in their students apps folder and in the H drive**

All students within the West Deptford School District are given a computer, allowing for 21st century learning to occur within every lesson/topic.

## **Differentiated Instruction**

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  - These questions are to extend the knowledge of each portion of the lesson.
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## **Learning Plan / Pacing Guide**

---

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- Sanding
- Accurate Measurements
- Precision in assembly
- Gluing and excess glue removal
- Staining
- Clear coating
- Problem solving
- Critical thinking
- Independent thinking
- Project planning

All week plans are subject to change due to the skill level and work efficiency of the students.

**Project Progress grade will be given on weeks 3,6**

### **Week 1:**

- Design personal project
- Complete Bill of Materials for personal project
- Submit drawings and Bill of Materials for approval

### **Weeks 2-7:**

#### **Construction of projects**

- Cutting material to size
- Sanding material
- Assembling of project
- Sanding of finished project

**Weeks 8-9:**

- **Stain project**
- **Clear coat project**
- **Submit for final project grade**