Unit 10 Wood Lathe Operation and Safety

Content Area: **Industrial Technology**
Course(s): **Construction Technology II**
Time Period: **year**
Length: **Weeks**
Status: **Published**

Unit Overview

Students will be able to Safely Operate the Wood Lathe to create a project as one becomes available.

Transfer

Students will be able to independently use their learning to...

To decide if they would like to purchase a wood lathe to repair or replace wood parts, or construct a project for themselves or others.

To decide if they would like to creat a Career or Hobby making projects or parts for monetary advantage.

For more information, read the following article by Grant Wiggins.

http://www.authenticeducation.org/ae_bigideas/article.lasso?artid=60

Meaning

Students will acquire skills on the Wood Lathe and Safely operate it to make projects or project parts.

Students will acquire the skills to purchase wood lathes for use at home or a business.

Students will identify and describe how they can earn money with this skill.

Understandings

Students will understand that...

That dull cutting tools are more dangerous then sharp cutting tools.

The Wood Lathe spins wood at a very high speed and if it is not secured correctly it could fly off striking them or others.

How to purchase the correct wood lathe if they chose to do this as a hobby or career.

The different types of turning tools and the correct usage and safety.

The importance of gluing materials correctly and preparation of the wood before turning.

How to file and sand wood on the lathe for surface preparation before abpplying finishes.

Selecting the correct wood finish if the project is to be used for drinking or eating out of it.

Essential Questions

Students will keep considering...

Do I know how to operate a wood lathe safely?

Have I attached and prepared ny wood blank correctly to mount in the wood lathe?

Have I mounted my wood blank correctly in wood lahte?

Have I rotated my wood blank by hand to make sure it is not striking anything before I turn on the Wood Lathe?

Have I mounted the tool rest correctly?

Have I selected the correct tool for the task I am about to perform and is it sharp?

Did I transfer my dimensions properly?

How do I avoid kick back of the tool or breaking the project?

Application of Knowledge and Skill

Students will be able to select a solid wood blank or glue up pieces of wood to create a blank for wood turning.

Students will prepare the wood blank for turning and then mount the wood blank in the lathe correctly.

Students will turn project down to desired shape safely.

Students will prepare project for finishing by filing and sanding with different grit sandpaper.

Students will apply stain and clear coat finishes to the project unless it is to be used for eating and drinking.

Students will know...

Students will know...

Not to operate the Wood Lathe unless they have passed the Safety Test and received permission from the instructor.

What Safety Hazards exist when operating a Wood Lathe.

The proper way of mounting stock in a wood lathe.

The correct cutting tool selection when performing a specific task.

Check by spining by hand work piece to make sure it is not striking anything on the wood lathe.

To make sure all guards are in place to protect the operator and other students.

The correct and safe method to cut on a wood lathe.

Students will be skilled at...

Students will be skilled at...

How to operate the Wood Lathe if they have passed the Safety Test and received permission from the instructor.

How to identify any Safety Hazards that exist when operating a Wood Lathe.

The proper way of mounting stock in a wood lathe.

To make sure all guards are in place to protect the operator and other students

The selection of the proper cutting tool when performing a specific task.

Turning between centers or face plate turning safely.

How to prepare project for finishing by filing and sanding with different grit sandpaper.

Applying the appropriate stain and finish to theor project once it is completed.

Academic Vocabulary

RPM. Torque, Faceplate, Flange, Tool Rest, Kick Back.

Learning Goal 1

Selecting Stock or Gluing of stock to create a Lathe Wood Turning Blank.

9.3.12.AC.3	Comply with regulations and applicable codes to establish and manage a legal and safe workplace.
9.3.12.AC.6	Read, interpret and use technical drawings, documents and specifications to plan a project.
9.3.12.AC.7	Describe career opportunities and means to achieve those opportunities in each of the Architecture & Construction Career Pathways.
9.3.12.AC-CST.2	Describe the approval procedures required for successful completion of a construction project.
9.3.12.AC-CST.4	Apply scheduling practices to ensure the successful completion 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.

Target 1

SWBAT to cut out stock to correct size and glue stock together with proper clamping to avoid any air gaps.

Target 2

SWBAT to prepare blank if turning between centers with the back saw, or mount on faceplate trimming stock so it is circular.

Learning Goal 2

Wood Lathe Operation Safety.

9.3.12.AC.3	Comply with regulations and applicable codes to establish and manage a legal and safe workplace.
9.3.12.AC.6	Read, interpret and use technical drawings, documents and specifications to plan a project.
9.3.12.AC.7	Describe career opportunities and means to achieve those opportunities in each of the Architecture & Construction Career Pathways.
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.8	Apply standards, applications and restrictions pertaining to the selection and use of construction materials, components and assemblies in the project design.

Target 1

SWBAT identify parts and safety hazards when operating a Wood Lathe.

Target 2

SWBAT safely mount wood blank to the lathe and select proper lathe tool and safely operate the Wood Lathe Turning between centers or with a faceplate.

Learning Goal 3

Wood Lathe Attachments and Outboard turning Safety.

9.3.12.AC.1	Use vocabulary, symbols and formulas common to architecture and construction.
9.3.12.AC.2	Use architecture and construction skills to create and manage a project.

9.3.12.AC.6	Read, interpret and use technical drawings, documents and specifications to plan a project.
9.3.12.AC.7	Describe career opportunities and means to achieve those opportunities in each of the Architecture & Construction Career Pathways.
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.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.

Target 1

SWBAT descibe and identify the safe way a tracing attachment that can be mounted on a wood lathe to duplicate a part may be added.

Target 2

SWBAT descibe and identify the safe way that a part can be mounted on a wood lathe to the out board side of a wood lathe to turn larger parts that the swing of the lathe can not accomodate.

Target 3

Formative Assessment and Performance Opportunities

Due to the lack of space and Wood Lathe equipment in the Construction Technology Lab the students will be graded on their advance projects each marking period. The students may turn in Wood Lathe project for a project grade.

Students will be graded daily on the Wood Lahte project by Instructor with the Weekly Work Grade sheet.

Students will also have the project graded with Industrial Technology Project Rubric.

Summative Assessment

Students will be graded on written test that are given in Google Classroom on Wood Lathe Safety Test.

Students will be graded on written test that are given in Google Classroom on Wood Lathe Set up Test.

Accommodations/Modifications

Students with Accommodations/Modifications can be assisted by students that have already completed the task.

Students with Accommodations/Modifications can retake the topic tests or take the test with a Special Needs Teacher.

Unit Resources

Online Wood Lathe Project Plans.

Online Youtube videos related to Wood Lathe safety.

Online Youtube videos related to Wood Lathe Attachments and Outboard turning.

Online tests posted in Google Classroom related to Wood Lathe Safety and Operation.

21st Century Life and Careers

Select all applicable standards from the applicable standards

CAEP.9.2.12.C.1	Review career goals and determine steps necessary for attainment.
CAEP.9.2.12.C.3	Identify transferable career skills and design alternate career plans.
CAEP.9.2.12.C.4	Analyze how economic conditions and societal changes influence employment trends and future education.
CAEP.9.2.12.C.6	Investigate entrepreneurship opportunities as options for career planning and identify the knowledge, skills, abilities, and resources required for owning and managing a business.
CAEP.9.2.12.C.7	Examine the professional, legal, and ethical responsibilities for both employers and employees in the global workplace.

Interdisciplinary Connections

	Mathematically proficient students start by explaining to themselves the meaning of a problem and looking for entry points to its solution. They analyze givens, constraints, relationships, and goals. They make conjectures about the form and meaning of the solution and plan a solution pathway rather than simply jumping into a solution attempt. They consider analogous problems, and try special cases and simpler forms of the original problem in order to gain insight into its solution. They monitor and evaluate their progress and change course if necessary. Older students might, depending on the context of the problem, transform algebraic expressions or change the viewing window on their graphing calculator to get the information they need. Mathematically proficient students can explain correspondences between equations, verbal descriptions, tables, and graphs or draw diagrams of important features and relationships, graph data, and search for regularity or trends. Younger students might rely on using concrete objects or pictures to help conceptualize and solve a problem. Mathematically proficient students check their answers to problems using a different method, and they continually ask themselves, “Does this make sense?” They can understand the approaches of others to solving complex problems and identify correspondences between different approaches.
MA.K-12.4	Model with mathematics.
MA.K-12.6	Attend to precision.
SCI.HS-ETS1-3	Evaluate a solution to a complex real-world problem based on prioritized criteria and trade-offs that account for a range of constraints, including cost, safety, reliability, and aesthetics, as well as possible social, cultural, and environmental impacts.
TECH.8.1.12	Educational Technology: All students will use digital tools to access, manage, evaluate, and synthesize information in order to solve problems individually and collaborate and to create and communicate knowledge.
TECH.8.1.12.A	Technology Operations and Concepts: Students demonstrate a sound understanding of technology concepts, systems and operations.
TECH.8.1.12.A.3	Collaborate in online courses, learning communities, social networks or virtual worlds to discuss a resolution to a problem or issue.
TECH.8.1.12.A.CS1	Understand and use technology systems.
TECH.8.1.12.C	Communication and Collaboration: Students use digital media and environments to communicate and work collaboratively, including at a distance, to support individual learning and contribute to the learning of others.
TECH.8.1.12.C.CS1	Interact, collaborate, and publish with peers, experts, or others by employing a variety of digital environments and media.
TECH.8.1.12.D	Digital Citizenship: Students understand human, cultural, and societal issues related to technology and practice legal and ethical behavior.
TECH.8.1.12.D.CS1	Advocate and practice safe, legal, and responsible use of information and technology.
TECH.8.1.12.D.CS2	Demonstrate personal responsibility for lifelong learning.
TECH.8.2.12.A.2	Analyze a current technology and the resources used, to identify the trade-offs in terms of availability, cost, desirability and waste.
TECH.8.2.12.B.CS4	The influence of technology on history.
TECH.8.2.12.D.3	Determine and use the appropriate resources (e.g., CNC (Computer Numerical Control) equipment, 3D printers, CAD software) in the design, development and creation of a technological product or system.
TECH.8.2.12.D.CS1	Apply the design process.
TECH.8.2.12.E.1	Demonstrate an understanding of the problem-solving capacity of computers in our world.