

Course Title – Woodworking I

Implement start year – 2015-2016

Revision Committee Members, email, extension – Daniel DiNatale ddinatale@lrhsd.org x 8987 Michael Johnston mjohnston1@lrhsd.org x8565 Alan Mills amills@lrhsd.org x8684 Chuck DiVincenzo cdivincenzo@lrhsd.org x6622

Unit #3 – Assembly and Finishing

Transfer Goal –

Students will be able to independently use their learning to construct a fully completed project.

Stage 1 – Desired Results

Established Goals

2009 NJCCC Standard(s), Strand(s)/CPI #
(<http://www.nj.gov/education/cccs/2009/final.htm>)

Common Core Curriculum Standards for Math and English
(<http://www.corestandards.org/>)

8.2 Technology Education, Engineering, and Design

All students will develop an understanding of the nature and impact of technology, engineering, technological design, and the designed world, as they relate to the individual, global society, and the environment.

- A. The Nature of Technology: Technology products and systems impact every aspect of the world in which we live.
- 8.2.12.A.1 Design and create a technology product or system that improves the quality of life and identify trade-offs, risks, and benefits.

21st Century Themes

(www.21stcenturyskills.org)

- Global Awareness
- Financial, Economic, Business and Entrepreneurial Literacy
- Civic Literacy
- Health Literacy
- Environmental Literacy

21st Century Skills

Learning and Innovation Skills:

- Creativity and Innovation
- Critical Thinking and Problem Solving
- Communication and Collaboration

Information, Media and Technology Skills:

- Information Literacy
- Media Literacy
- ICT (Information, Communications and Technology) Literacy

B. Design: Critical Thinking, Problem Solving, and Decision making:
The design process is a systematic approach to solving problems.

- 8.2.12.B.1 Design and create a product that maximizes conservation and sustainability of a scarce resource, using the design process and entrepreneurial skills throughout the design process.
- 8.2.12.B.2 Design and create a prototype for solving a global problem, documenting how the proposed design features affect the feasibility of the prototype through the use of engineering, drawing, and other technical methods of illustration.
- 8.2.12.B.3 Analyze the full costs, benefits, trade-offs, and risks related to the use of technologies in a potential career path.

C. Technological Citizenship, Ethics and Society: Knowledge and understanding of human, cultural, and societal values are fundamental when designing technology systems and products in the global society.

- 8.2.12.C.1 Analyze the ethical impact of a product, system, or environment, worldwide, and report findings in a web-based publication that elicits further comment and analysis.
- 8.2.12.C.2 Evaluate ethical considerations regarding the sustainability of resources that are used for the design, creation, and maintenance of a chosen product.
- 8.2.12.C.3 Evaluate the positive and negative impacts in a design by providing a digital overview of a chosen product and suggest potential modifications to address the negative impacts.

Life and Career Skills:

- Flexibility and Adaptability
- Initiative and Self-Direction
- Social and Cross-Cultural Skills
- Productivity and Accountability
- Leadership and Responsibility

D. Research and Information Fluency: Information-literacy skills, research, data analysis, and prediction provide the basis for the effective design of technology systems

- 8.2.12.D.1 Reverse-engineer a product to assist in designing a more eco-friendly version, using an analysis of trends and data about renewable and sustainable materials to guide your work.

E. Communication and Collaboration: Digital tools facilitate local and global communication and collaboration in designing products and systems.

- 8.2.12.E.1 Use the design process to devise a technological product or system that addresses a global issue, and provide documentation through drawings, data, and materials, taking the relevant cultural perspectives into account throughout the design and development process.

F. Resources for a technological world: Technological products and systems are created through the application and appropriate use of technological resources.

- 8.2.12.F.1 Determine and use the appropriate application of resources in the design, development, and creation of a technological product or system.
- 8.2.12.F.2 Explain how material science impacts the quality of products.
- 8.2.12.F.3 Select and utilize resources that have been modified by digital tools (e.g., CNC equipment, CAD software) in the creation of a technological product or system.

G. The Designed World: The designed world is the product of a design process that provides the means to convert resources into

<p>products and systems.</p> <p>8.2.12.G.1 Analyze the interactions among various technologies and collaborate to create a product or system demonstrating their interactivity.</p> <p><u>CCSS.ELA-LITERACY.RST.9-10.3</u> Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks, attending to special cases or exceptions defined in the text.</p> <p><u>CCSS.ELA-LITERACY.WHST.9-10.2.F</u> Provide a concluding statement or section that follows from and supports the information or explanation presented (e.g., articulating implications or the significance of the topic).</p> <p><u>9.1 21st-Century Life & Career Skills</u> All students will demonstrate the creative, critical thinking, collaboration, and problem-solving skills needed to function successfully as both global citizens and workers in diverse ethnic and organizational cultures.</p> <p>9.1.12.A.1</p> <p>Apply critical thinking and problem-solving strategies during structured learning experiences.</p>	
<p><u>Enduring Understandings:</u> <i>Students will understand that . . .</i></p> <p><i>EU 1</i></p> <ul style="list-style-type: none"> proper assembly techniques influence the structural integrity of a project <p><i>EU 2</i></p>	<p><u>Essential Questions:</u></p> <p><i>EU 1</i></p> <ul style="list-style-type: none"> How do different assembly techniques affect the structural integrity of a project? What role do fasteners play in the assembly of a project? <p><i>EU 2</i></p> <ul style="list-style-type: none"> What defines “good” surface preparation?

<ul style="list-style-type: none"> • surface preparation and finish selection affects the aesthetic and textural characteristics of the overall project 	<ul style="list-style-type: none"> • How does one know what finish to select for a project?
<p>Knowledge: <i>Students will know . . .</i></p> <p><i>EU 1</i></p> <ul style="list-style-type: none"> • the characteristics of a dry run assembly. • nailing techniques. • screwing techniques. • plugging techniques. • gluing techniques. • wood Joints. <p><i>EU 2</i></p> <ul style="list-style-type: none"> • filing techniques. • planing techniques. • sanding techniques. • staining techniques. • clear coating techniques. 	<p>Skills: <i>Students will be able to . . .</i></p> <p><i>EU 1</i></p> <ul style="list-style-type: none"> • perform a dry run assembly. • insert and remove nails. • insert and remove screws. • plug a hole. • glue lumber together. • assemble wood joints. <p><i>EU 2</i></p> <ul style="list-style-type: none"> • file a board or project. • plane a board. • sand a board or project. • stain a project. • clear coat a project.
<p>Stage 2 – Assessment Evidence</p>	
<p>Recommended Performance Tasks:</p>	

Other Recommended Evidence: *Tests, Quizzes, Prompts, Self-assessment, Observations, Dialogues, etc.*

- Quizzes/Tests on assembly and steps to finishing
- Self-Assessment of projects using project rubric
- Weekly evaluation/checkpoints activity
- Peer Critique and discussion on projects
- Final project/portfolio

Stage 3 – Learning Plan

Suggested Learning Activities to Include Differentiated Instruction and Interdisciplinary Connections: *Each learning activity listed must be accompanied by a learning goal of A= Acquiring basic knowledge and skills, M= Making meaning and/or a T= Transfer.*

- Teacher demonstrations on assembly techniques (A)
- Teacher will model steps to finishing (A)
- Student practice activities on various assembly techniques: dry run, nailing, screwing, plugging, etc. (M,T)
- Student practice activities of various finishing techniques: filing, sanding, staining, clear coating, etc. (M,T)
- Student journaling (M,T)
- Peer critiques as a form of critical assessment and reflection. (T)
- Students design self-evaluation rubrics (T)
- Student collaboration on project assembly (T)
- Student collaboration on project finishing (T)