

**Course Title – Woodworking 2**

**Implement start year – 2015-2016**

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**Unit #3 – Introduction to Furniture and Cabinetmaking**

**Transfer Goal –**

Students will be able to independently use their learning to research, design and construct a custom piece of furniture.

**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.

**21<sup>st</sup> Century Themes**

( [www.21stcenturyskills.org](http://www.21stcenturyskills.org) )

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

**21<sup>st</sup> 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> <ul style="list-style-type: none"> <li>8.2.12.G.1 Analyze the interactions among various <u>technologies</u> and collaborate to create a product or system demonstrating their interactivity.</li> </ul> <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 &amp; 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><b><u>Enduring Understandings:</u></b> <i>Students will understand that . . .</i></p> <p><i>EU 1</i></p> <p>the art of cabinetmaking encompasses a vast array of woodworking skills and techniques.</p> <p><i>EU2</i></p>	<p><b><u>Essential Questions:</u></b></p> <p><i>EU 1</i></p> <ul style="list-style-type: none"> <li>How do the different case/carcass designs effect a woodworking project?</li> </ul> <p><i>EU2</i></p>

<p>the addition of drawers/doors to a project can add increased function as well as aesthetic value.</p> <p><i>EU 3</i></p> <p>reading and interpreting plans is an important part of the design process.</p> <p><i>EU 4</i></p> <p>there are a variety of tools and techniques a woodworker can use to create a desired product.</p>	<ul style="list-style-type: none"> <li>• What role do doors and drawers play in a woodworking project?</li> </ul> <p><i>EU 3</i></p> <ul style="list-style-type: none"> <li>• What is the value of being able to interpret plans and procedures?</li> </ul> <p><i>EU 4</i></p> <ul style="list-style-type: none"> <li>• What are the best choices of basic tools, materials and techniques woodworkers use to get a desired result?</li> <li>• How do woodworkers choose tools, techniques, and materials to express their ideas?</li> </ul>
<p><b>Knowledge:</b> <i>Students will know . . .</i></p> <p><i>EU 1</i></p> <ul style="list-style-type: none"> <li>• types of frame construction.</li> <li>• leg and rail construction.</li> <li>• standard sizes used in furniture / cabinetmaking.</li> <li>• proper lumber selection.</li> <li>• shelf construction.</li> <li>• top construction.</li> </ul> <p><i>EU2</i></p> <ul style="list-style-type: none"> <li>• drawer construction.</li> <li>• drawer guides.</li> <li>• the difference between swinging and sliding doors.</li> <li>• raised paned door construction.</li> <li>• door and drawer hardware.</li> </ul> <p><i>EU 3</i></p> <ul style="list-style-type: none"> <li>• how to read project plans.</li> </ul>	<p><b>Skills:</b> <i>Students will be able to . . .</i></p> <p><i>EU 1</i></p> <ul style="list-style-type: none"> <li>• construct face frames and aprons.</li> <li>• construct a variety of legs and rails.</li> <li>• apply standard size theory in project design.</li> <li>• select an appropriate lumber for the given project.</li> <li>• design and construct shelves.</li> <li>• design and construct tops.</li> </ul> <p><i>EU2</i></p> <ul style="list-style-type: none"> <li>• construct a variety of different drawers.</li> <li>• select an appropriate drawer guide for the given project.</li> <li>• select an appropriate door type for a given project.</li> <li>• design and construct raised panel doors.</li> <li>• select appropriate door and drawer hardware for a given project.</li> </ul> <p><i>EU 3</i></p> <ul style="list-style-type: none"> <li>• interpret a project plan to complete a desired project.</li> </ul>

- bill of materials.
- Procedures.
- working drawings.

*EU 4*

- the most effective tool and technique for the desired application.
- hand tools vs. power tools.
- wood joints.

*EU 4*

- select the proper tool for the job.
- choose the proper technique to achieve the desired outcome.
- operate hand tools safely and effectively.
- operate power tools safely and effectively.

## Stage 2 – Assessment Evidence

### Recommended Performance Tasks:

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

- Quizzes on cabinetmaking, drawer and door construction techniques
- Cabinetmaking practice exercises (ex. wood joints, face frames, aprons, shelves, etc.)
- Door and drawer practice exercises (ex. raised panels, sliding doors, hardware installation, lip and flush drawers, etc.)
- Observation of cabinet, door and drawer design and construction
- Group discussions on hardware selection

### 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 cabinetmaking techniques (A)
- Teacher will model how to assemble doors and show correct glueing procedures (A)
- Use of supplemental materials such as videos on drawer construction. (A)
- Students will practice how to assemble the drawers using provided wood joints (M)
- Students will work in groups to select appropriate project materials (M)
- Student journaling (M,T)
- Peer critiques as a form of reflection. (T)
- Students design self-evaluation rubrics (T)