Course Title – Woodworking 3

Implement start year – 2015-2016

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Unit #2 – Production Decisions

Transfer Goal –

Students will be able to independently use their learning to successfully create a plan of procedure that investigates design principles.

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:
_x__Creativity and Innovation
_x__Critical Thinking and Problem Solving
_x__Communication and Collaboration

Information, Media and Technology Skills:
_x__Information Literacy
_x__Media Literacy
_x__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:* _x__Flexibility and Adaptability _x__Initiative and Self-Direction _x__Social and Cross-Cultural Skills _x__Productivity and Accountability _x__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	

products and systems. • 8.2.12.G.1 Analyze the interactions among various technologies and collaborate to create a product or system demonstrating their interactivity. CCSS.ELA-LITERACY.RST.9-10.3 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. CCSS.ELA-LITERACY.WHST.9-10.2.F 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). 9.1 21st-Century Life & Career Skills 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. 9.1.12.A.1 Apply critical thinking and problem-solving strategies during structured learning experiences.	
Enduring Understandings: *Students will understand that . . .* *EU 1* • design principles and proper planning will lead to the overall success of a project.	**Essential Questions:** *EU 1* • Why is it important to know the overall room dimensions and finish when designing a project? • What type of style elements do you need to incorporate into your design to be suitable for a particular time period? • What problems could I encounter if I do not research proper wood joints for construction? • What is the value of being able to interpret plans and procedures? • Why do we utilize project plans to create furniture?

EU 2 • form and function play a pivotal role in designing furniture. • period pieces of furniture contain different elements of design. *EU 3* • there are a variety of materials a woodworker should consider when designing cabinetry.	*EU 2* • How does the furniture style fit the period of the room? • What function does the piece perform? • How can you recognize different period pieces? *EU 3* • What are the best choices of lumber, veneers, laminates, and glass woodworkers use to get a desired result? • How does a woodworker choose the tools, tooling, and procedures necessary to build the product in the most efficient manner?
Knowledge: *Students will know . . .* *EU 1* • the design elements within a room to determine if it serves its intended purpose. • that planning for production involves making efficient and effective decisions related to materials, tools, tooling and processes. *EU 2* • the definition of form and function and how it relates to design. • the purpose of the project to fulfill a desired need. *EU 3* • the most effective lumber, adhesives, mechanical fasteners or joinery. • the proper techniques in order to cut material most effectively.	**Skills:** *Students will be able to . . .* *EU 1* • research project designs. • interpret a project plan to complete a desired project. • compare alternative design plans. • make informed decisions about proper lumber selection for a given application. *EU 2* • determine the most effective material to satisfy project needs • minimize wasted time by determining effective construction procedures. • distinguish between different period pieces. *EU 3* • plan for production by making effective decisions related to materials, tools, tooling, and processes.

Stage 2 – Assessment Evidence

Recommended Performance Tasks:

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

- Teacher generated tests on design
- Teacher will provide ongoing feedback, individual conferences, while students are working on design aspects
- Chapter questions on design and material components
- Students will have group discussions about proper fastening techniques
- Final Practicum

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 will model how the elements of design will impact project development (A)
- View exemplar project plans (A)
- Discuss various elements of period furniture. (A,M)
- Students will work in groups to identify the simiilarities and differences of various wood properties (A,M)
- Students will ananlyze selected woodworking projects to identify elements and principles of design (M)
- Pick two types of drawings and explain how they are different. (M,T)
- Create a self assessment rubric that would evaluate the key components of a correctly constructed drawing (M,T)
- Peer critiques as a form of critical assessment. (T)
- Produce a plan of procedure and Bill of Materials(T)
- Student journaling and self reflection (T)