Course Title – Woodworking 4

Implement start year – 2015-2016

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Unit #2 – Capstone Design Project

Transfer Goal –

Students will be able to independently use their learning from Woods 1-3 to design and construct a capstone project / projects that solves a real world problem.

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.

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.

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

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.	*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
Enduring Understandings: *Students will understand that . . .* *EU 1* there is more than one way to solve a problem. *EU 2* there are a variety of tools and techniques a woodworker can use to create a desired product. EU 3 Time / resource management are important life skills	**Essential Questions:** *EU 1* • How do you classify something as a problem? • Is there such a thing as the perfect solution? • What is good design? *EU 2* • What are the best choices of basic tools, materials and techniques woodworkers use to get a desired result? • How do woodworkers choose tools, techniques, and materials to express their ideas? EU 3 • Can you be successful without good time management?

	• How can resource management effect the success/failure of a project?
<u>Knowledge:</u> *Students will know . . .* *EU 1* • the steps of the design loop. *EU 2* • the most effective tool and technique for the desired application. *EU 3* • how to effectively manage their time and given resources	**<u>Skills:</u>** *Students will be able to . . .* *EU 1* • Identify problems. • Frame a design brief. • Research and investigate. • Generate alternate solutions. • Choose the best solution. • Create/test/evaluate a prototype. • Reflect and redesign to compensate for design flaws. *EU 2* • select the proper tool for the job. • choose the proper technique to achieve the desired outcome. EU 3 • Create bill of materials • Calculate cost of a given project • Calculate board feet • Create a gant chart
Stage 2 – Assessment Evidence	
Recommended Performance Tasks:	

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

- Quiz/Test on the design loop
- Group discussions on design
- Group discussions on proper safety practices
- Group discussion on tool selection and usage
- Observation of student performance
- Self-evaluation using rubric

Stage 3 – Learning Plan

Suggested Learning Activities to Include Differentiated Instruction and Interdisciplinary Connections: *Consider the WHERETO elements. 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.*

- Peer observations on advanced woodworking techniques(A)
- Teacher led discussions on safety, tool selection and usage(A)
- Use of supplamental materials such as video and internet to ehhance student knowledge (A)
- Practice new skillsets on hand and power tools (M)
- Create portfolio to document all aspects of the capstone project (M,T)
- Demonstrate proper tool usage (M,T)
- Student presentations of completed portfolio and project (M,T)
- Individual student/teacher conferences to assess progress, questions and concerns (M,T)
- Student journaling, self-reflection, and self-evaluation (T)