



## Northern York County School District

### Curriculum Overview

<b>Course: Design &amp; Fine Woodworking</b>	
<b>Grade Level: 12</b>	
<b>Approval Date:</b>	<b>Length of Time: 180 days / 1 credit</b>
<b>Course Description:</b> Design & Fine woodworking is the highest and last level course of woodworking. Students must have completed the following courses <b>Material Tech Woodworking, Furniture &amp; Joinery and Manufacturing &amp; CNC</b> to take Design & Fine Woodworking. Students will take everything they have learned over the last three years and complete teacher-approved projects. Students will also complete a Capstone Project which will involve critical thinking and problem-solving skills to create a service project for the community. Students will review measurement, shop, machine and tool safety, problem solving, Fusion360, project planning, joinery & furniture design and manufacturing & CNC work to complete their projects. Each project must relate to the previous courses they have taken. Students will create a portfolio on Microsoft PowerPoint of their projects and present a final report at the end of year.	
<b>Course Objectives:</b> <ul style="list-style-type: none"> <li>• Students will demonstrate a high level of understand and application of shop, machine, and tool safety</li> <li>• Students will demonstrate a high level of understanding the appropriate selection, use, and care of tools and machines</li> <li>• Students will read, draw, and create technical project plans on Fusion360 with exemplary levels of accuracy and detail</li> <li>• Students will understand and engage fully in the Capstone Project.</li> <li>• Students will create projects using the skills learned in previous courses and demonstrate independent mastery of concepts.</li> </ul>	
<b>Related Standards:</b>  <u>Pennsylvania Technology and Engineering Standards</u>  <i>Nature and Characteristics of Technology &amp; Engineering</i> <ul style="list-style-type: none"> <li>• Use project management tools, strategies, and processes in planning, organizing, and controlling work.</li> </ul> <i>Design Thinking in Technology and Engineering Education</i> <ul style="list-style-type: none"> <li>• Implement and critique principles, elements, and factors of design</li> <li>• Refine design solutions to address criteria and constraints.</li> <li>• Recognize and explain how their community and the world around them informs technological development and engineering design.</li> <li>• Apply principles of human-centered design.</li> </ul> <u>Pennsylvania Academic Standard</u> <ul style="list-style-type: none"> <li>• Apply scale as a way of relating concepts and ideas to one another by some measure</li> </ul>	

<ul style="list-style-type: none"> <li>• Identify and safety use a variety of tools, basic machines, materials and techniques to solve problems and answer questions</li> <li>• Apply appropriate apparatus to examine a variety of objects and processes</li> <li>• Analyze and use the technological design process to solve problems.</li> </ul>	
<b>Units:</b> <ol style="list-style-type: none"> <li>1. Measurement &amp; Safety (Shop, Machine, and Tools)</li> <li>2. Introduction to Portfolio Design</li> <li>3. Technical Drawings on Fusion 360</li> <li>4. Manufacturing Process and CNC Review</li> <li>5. Joinery and Furniture Review</li> <li>6. Design Process &amp; Fine Woodworking Capstone Project</li> </ol>	
<b>Concepts:</b> <ul style="list-style-type: none"> <li>• Measurement and accuracy</li> <li>• Students will review and understand shop, machine and tool machine safety</li> <li>• Employing Fusion360</li> <li>• The manufacturing process and CNC Machine/Plasma Cutter.</li> <li>• Joinery and furniture design</li> <li>• Electronic project portfolios</li> <li>• Technical drawings (Multiview &amp; Isometric)</li> <li>• The design process to create fine woodworking projects</li> <li>• Career Retention and Advancement: cooperation &amp; teamwork, group interaction, budgeting, and time management</li> </ul>	<b>Competencies:</b> <ul style="list-style-type: none"> <li>• Students will be following safety procedures for the general shop and machines/tools daily mandated by the state of Pennsylvania.</li> <li>• Students will be able to measure up to 1/16<sup>th</sup> of an inch.</li> <li>• Students will be able to operate woodworking tools and machines such as the planer, jointer, table saw, drill-press, router machine, belt sanders, miter-saw, jigsaw, &amp; bandsaw.</li> <li>• Students will be able to apply different types of wood joinery including Basic Butt, Tongue and Groove, Miter Butt, Half-Lap, Mortise and Tenon, Pocket Joint, Rabbet Joint and Dovetail.</li> <li>• Students will use the Manufacturing Process and be able to operate the CNC Machine/ Plasma Cutter for their projects.</li> <li>• Students will be able to figure out the amount of material they need for each project.</li> <li>• Students will use the Design Process to complete projects throughout the year.</li> <li>• Students will use Fusion360 to complete technical drawings.</li> <li>• Students will create a portfolio on Microsoft PowerPoint to present to the teacher</li> <li>• Students will create a Service Capstone project and present it.</li> </ul>
<b>Learning Activities:</b> <ul style="list-style-type: none"> <li>• Teacher Demonstrations</li> <li>• Peer Teaching</li> <li>• Individual Projects</li> <li>• Project Videos and Techniques</li> <li>• Technical Drawings (Fusion360)</li> <li>• PowerPoint (Portfolio Design)</li> </ul>	<b>Performance Tasks:</b> <ul style="list-style-type: none"> <li>• Quizzes</li> <li>• A Capstone Projects designed to meet the interest and achievement level of individual students</li> <li>• Portfolio Presentation</li> <li>• Capstone Presentation</li> </ul>

<ul style="list-style-type: none"> <li>• Capstone Project</li> </ul>	
<b>Other Assessment Measures:</b> <ul style="list-style-type: none"> <li>• Teacher evaluation and conferencing</li> <li>• Peer conferencing</li> <li>• Self-reflection</li> <li>• Project rubrics</li> </ul>	
<b>Textbook/Primary Resource:</b> <ul style="list-style-type: none"> <li>• Fusion360, Microsoft PowerPoint, Microsoft Word</li> </ul>	
<b>Supplemental Resource Materials:</b> <ul style="list-style-type: none"> <li>• YouTube &amp; Woodworking Texts &amp; Instructional Material</li> </ul>	