KIRKWOOD
SCHOOL DISTRICT

WOODWORKING II

(Board of Education Approved August 12, 2024)

Course Description:
This course allows students to explore woodworking and the processes used with a more in-depth curriculum. Not only will students transform raw materials into a finished project, they will also be able to look at and use advanced woodworking techniques used in the wood manufacturing industry. Students will design and construct a wood project throughout the semester course that is uniquely their creation. An emphasis will be placed on how to safely use hand and power tools and how to develop a project from their designs. Prerequisite: Woodworking I.

Grade Level: 8th Grade (semester)

Unit Scope and Sequence

Unit 1: Engineering Design/Project Selection
Unit 2: Project and Building Materials
Unit 3: Safety in Woodworking
Unit 4: Portable/Machine Tools in Woodworking
Unit 5: Construction of Projects
Unit 6: Assembly of Projects
Unit 7: FInishing Techniques/Finishing Selection

Course Enduring Understandings:

- Safe woodworking practices are essential during the woodworking project process.
- Woodworking project unique creation requires careful planning, and then the creation, assembly and refinement of project pieces.
- Use of the Engineering Design Process is an essential component in the woodworking process.

Course Essential Questions:

- How do you maintain a safe environment in a woodworking setting?
- How do you use an Engineering Design Process to plan, create, assemble, and refine a unique project?

Woodworking II
Unit 1: Engineering Design/Project Selection

Preceding the creation of a project, students discuss the design process and learn to implement iterative development, refinement, and problem-solving.

Unit Essential Learning Targets	
Enduring Understandings	***Essential Questions***
• Design woodworking and other building projects.	• How will students use the design process to implement skills learned in Wood I learned to develop an individual and personal project?
Students must know:	***Students must be able to:***
• Engineering Design Process • Design Drawings • Cabinet and Furniture Styles • Hardware • Material Cost • Plan of Procedure (POP)	• Use an Engineering Design Process to solve problems. • Read and interpret woodworking plans. • Identify component parts of a cabinet. • Identify cabinet/construction hardware. • Calculate materials costs. • Prepare a cut sheet. • Develop a Useable Plan of Procedure (POP) that will and can be updated periodically.

Missouri Learning Standards

Evaluate the processes used in recognizing and solving problems (Show Me 3.4).

- Reading and evaluating nonfiction works and material (such as biographies, newspapers, technical manuals) (Show Me CA3).
- Writing formally (such as reports, narratives, essays) and informally (such as outlines, notes) (Show Me CA4).
- Participating in formal and informal presentations and discussions of issues and ideas (Show Me CA6).
- Addition, subtraction, multiplication and division; other number sense, including numeration and estimation; and the application of these operations and concepts in the workplace and other situations (Show Me MA1).
- Geometric and spatial sense involving measurement (including length, area, volume) (Show Me MA2).
- Use technological tools and other resources to locate, select and organize information (Show Me 1.4).
- Develop and apply strategies based on ways others have prevented or solved problems (Show Me 3.2).

Woodworking II
Unit 1: Engineering Design/Project Selection

- Develop and apply strategies based on one's own experience in preventing or solving problems (Show Me 3.3).
- Examine problems and proposed solutions from multiple perspectives (Show Me 3.6).
- Assess costs, benefits and other consequences of proposed solutions (Show Me 3.8).
- Identify and apply practices that preserve and enhance the safety and health of self and others (Show Me 4.7).

Woodworking II
UNIT 2: Project and Building Materials

This unit will review with students the materials used in woodworking projects as well as their origins.

Unit Essential Learning Targets	
Enduring Understandings	***Essential Questions***
• Describe and safely interact with all basic woodworking systems (e.g., equipment, tools, and applied academic skills)	• How are woodworking and wood products essential in our everyday lives? • How do we measure and calculate to develop a supply list? • How is the design process for plan development utilized in practice?
Students must know:	***Students must be able to:***
• Wood Species • Wood Products • Environmental Impact • Measurement • Math Skills • Following Instructions • Cost Awareness • Hand Tools	• List several uses of wood and wood products. • Review the use of fractions as they pertain to measurement • Evaluate the board/foot and cost formulas • Read and interpret a rule/tape measure (e.g., standard and metric). • Use Designing Technology Software to Develop and Read Plans.

Missouri Learning Standards

Identify and apply practices that preserve and enhance the safety and health of self and others (Show Me 4.7).

- Speaking and writing standard English (including grammar, usage, punctuation, spelling, capitalization) (Show Me CA1).
- Addition, subtraction, multiplication and division; other number sense, including numeration and estimation; and the application of these operations and concepts in the workplace and other situations (Show Me MA1).
- Geometric and spatial sense involving measurement (including length, area, volume) (Show Me MA2).
- Develop and apply strategies based on ways others have prevented or solved problems (Show Me 3.2).
- Assess costs, benefits and other consequences of proposed solutions (Show Me 3.8).

Woodworking II
UNIT 3: Safety in Woodworking

This unit will require students to acquire and utilize safe practices with respect to new lab/shop equipment and interactions.

Unit Essential Learning Targets	
Enduring Understandings	***Essential Questions***
• Appreciate and apply all personal and workplace safety procedures	• How do students comprehend and implement safe lab/shop safety practices? • How do students use safe practices as they apply to newly introduced equipment?
Students must know:	***Students must be able to:***
• Safety • First Aid • PPE • Hazardous Material • Proper Attire	• Demonstrate appropriate lab safety practices (e.g., set up, lifting, electrical, lockout, housekeeping, PPE, power tools, hazardous material use and disposal). • Recognize when first aid is needed for occupational injuries and follow proper procedures. • Communicate safe lab practices. • Maintain safe work attire and appearance (e.g., no loose clothing, hair tied back, and no jewelry).

Missouri Learning Standards

Identify and apply practices that preserve and enhance the safety and health of self and others (Show Me 4.7).

- Reading and evaluating nonfiction works and material (such as biographies, newspapers, technical manuals) (Show Me CA3).
- Consumer health issues (such as the effects of mass media and technologies on safety and health) (Show Me HP6).
- Responses to emergency situations (Show Me HP7).
- Impact of science, technology and human activity on resources and the environment (Show Me SC8).
- Use technological tools and other resources to locate, select and organize information (Show Me 1.4).
- Identify problems and define their scope and elements (Show Me 3.1).

- Reason inductively from a set of specific facts and deductively from general premises (Show Me 3.5).

Woodworking II
UNIT 4: Portable/Machine Tools in Woodworking

This unit is designed to review with students the various equipment used to build woodworking projects as well as their appropriate and safe use.

Unit Essential Learning Targets	
Enduring Understandings	***Essential Questions***
• Use power tools and equipment consistent with industry and safety standards.	• How are students safely and accurately using Power Tools and Equipment ? • How do students "set-up" and install blades and bits onto equipment and tools?
Students must know:	***Students must be able to:***
• Portable Power Tools • Table Saw • Miter Saw • Band Saw • Drill Press • Jointer • Planer • Sanding Machines • Jigs and Fixtures • Chuck Key	• Demonstrate proper use of portable electric tools. • Operate saws accurately (e.g., table, miter and band). • Understand safe "set-up" of equipment. • Operate table saw with Dado Blade. • Operate drill press accurately. • Operate the jointer accurately. • Operate a planer/surfacer accurately. • Operate Sanding Equipment • Operate and set up Jigs and Fixtures

Missouri Learning Standards

Show Identify and apply practices that preserve and enhance the safety and health of self and others (Show Me 4.7).

- Speaking and writing standard English (including grammar, usage, punctuation, spelling, capitalization) (Show Me CA1).
- Addition, subtraction, multiplication and division; other number sense, including numeration and estimation; and the application of these operations and concepts in the workplace and other situations (Show Me MA1).
- Geometric and spatial sense involving measurement (including length, area, volume) (Show Me MA2).
- Apply acquired information, ideas and skills to different contexts as students, workers, citizens and consumers (Show Me 1.10).
- Plan and make written, oral and visual presentations for a variety of purposes and audiences (Show Me 2.1).
- Develop and apply strategies based on ways others have prevented or solved problems (Show Me 3.2).

Woodworking II
UNIT 5: Construction of Projects

During this unit, students construct various woodworking projects of their own design, utilizing the safety skills and tool knowledge gained in previous units. Additionally, students practice new processes associated with project construction. Students will use these pieces during the assembly phase in Unit 5.

Unit Essential Learning Targets	
Enduring Understandings	***Essential Questions***
• Construct woodworking joinery consistent with industry and safety standards.	• How will students assemble projects and what woodworking joinery will they use?
Students must know:	***Students must be able to:***
• Woodworking Joints • Hardware • Butt Joint • Dado • Rabbet • Pocket Hole • Jigs • Dovetail • Mortise and Tenon • Fixtures	• Identify types of Basic Joints used in woodworking. • Describe and demonstrate various advanced woodworking joints. • Select and use fasteners when constructing joints (e.g. Butt Joints, Dado, Rabbet, Pocket Holes , Dovetail, screws, etc).

Missouri Learning Standards

Identify and apply practices that preserve and enhance the safety and health of self and others (Show Me 4.7).

- Reading and evaluating nonfiction works and material (such as biographies, newspapers, technical manuals) (Show Me CA3).
- Addition, subtraction, multiplication and division; other number sense, including numeration and estimation; and the application of these operations and concepts in the workplace and other situations (Show ME MA1).
- Geometric and spatial sense involving measurement (including length, area, volume) (Show Me MA2).
- Apply acquired information, ideas and skills to different contexts as students, workers, citizens and consumers (Show Me 1.10).
- Perform or produce works in the fine and practical arts (Show Me 2.5).
- Develop and apply strategies based on ways others have prevented or solved problems (Show Me 3.2).

Woodworking II
UNIT 6: Assembly of Projects

During this unit, students will assemble the project pieces they created during unit 4 while developing new skills to accomplish these tasks. This project will be of the students' own design.

Unit Essential Learning Targets	
Enduring Understandings	***Essential Questions***
Glue and clamp woodworking projects	• How will students properly glue projects together for maximum stability and proper and clean appearance?
Students must know:	***Students must be able to:***
• Glue • Clamping • Glueing Procedure	• Identify various types of glues, their precautions and uses. • Use clamps (e.g., bar, hand-screw and C) during gluing operations. • Perform safe and proper gluing procedures.

Missouri Learning Standards
Identify and apply practices that preserve and enhance the safety and health of self and others (Show Me 4.7). • Reading and evaluating nonfiction works and material (such as biographies, newspapers, technical manuals) (Show Me CA3). • Apply acquired information, ideas and skills to different contexts as students, workers, citizens and consumers (Show Me 1.10). • Develop and apply strategies based on ways others have prevented or solved problems (Show Me 3.2).

Woodworking II
UNIT 7: Finishing Techniques/ Finishing Selection

Students refine the projects of their own design during this phase of the woodworking course, which results in unique, completed projects.

Unit Essential Learning Targets	
Enduring Understandings	***Essential Questions***
• Finish wood projects consistent with industry and safety standards	• How do students safely and accurately prepare for and add finish to their woodworking project? • Can students describe other methods and techniques of finishing projects?
Students must know:	***Students must be able to:***
• Sandpaper Grits • Proper Sanding Techniques • Wet Sanding • Stains • Top Coats • Finish Application • Wax	• Identify types and grades of abrasive materials. • Prepare surface for finishing (e.g., sanding). • Identify stains and application procedures. • Identify finishes, their uses, and precautions. • Apply finishes.

Missouri Learning Standards
Identify and apply practices that preserve and enhance the safety and health of self and others (Show Me 4.7). • Reading and evaluating nonfiction works and material (such as biographies, newspapers, technical manuals) (Show Me CA3). • Apply acquired information, ideas and skills to different contexts as students, workers, citizens and consumers (Show Me 1.10). • Develop and apply strategies based on ways others have prevented or solved problems (Show Me 3.2). • Develop and apply strategies based on one's own experience in preventing or solving problems (Show Me 3.3).