

**EXAM INFORMATION****Items**

66

Points

66

Prerequisites

NONE

Grade Level

10-12

Course Length

ONE SEMESTER

Career Cluster

ARCHITECTURE AND CONSTRUCTION

MANUFACTURING

Performance Standards

INCLUDED

Certificate Available

YES

DESCRIPTION

The first instructional course in a sequence that prepares individuals to apply technical knowledge and skills to lay out and shape stock; assemble projects; saw and sand projects; and stresses the safe use a variety of hand and power tools and machinery. Recommended projects would be anything that would allow students to incorporate all joints and tools (e.g., nightstand).

EXAM BLUEPRINT**STANDARD****PERCENTAGE OF EXAM**

1- Woodworking Design & Theory	18%
2- Safety	33%
3- Processing Materials	16%
4- Milling & Assembly	25%
5- Automated Manufacturing Processes	8%
6- Professional Development (Optional)	



STANDARD 1

STUDENTS WILL UNDERSTAND WOODWORKING DESIGN AND THEORY

- Objective 1** Understand basic elements of the woodworking industry.
1. Identify career opportunities in cabinetmaking/millwork manufacturing.
 2. Identify career opportunities in related millwork industries by using career pathways.
 3. Soft Skills Ethics: be on time, etc.
- Objective 2** Understand basic plan elements.
1. Read and use a scale drawing to create a project.
 2. Use a material list.
 3. Use a procedure list.
- Objective 3** Understand and demonstrate basic math and measuring concepts.
1. Add two- and three-digit numbers.
 2. Subtract two-, three-, and four-digit numbers.
 3. Solve two-digit divisor numbers.
 4. Multiply a two-digit factor.
 5. Add, subtract, multiply, and divide fractions and mixed numbers.
 6. Convert fractions to decimals.
 7. Reduce fractions.
 8. Add, subtract, multiply, and divide decimal numbers.
 9. Calculate percentages and basic ratios.
 10. Add and subtract linear measurement in feet and inches.
 11. Use a ruler or measuring tape to measure within a sixteenth ($1/16$) of an inch.

Standard 1 Performance Evaluation included below (Optional)

STANDARD 2

STUDENTS WILL UNDERSTAND AND DEMONSTRATE THE SAFE USE OF WOODWORKING TOOLS.

- Objective 1** Understand and demonstrate the safe use of hand tools.
1. Describe the purpose and demonstrate the proper use of the following measuring and layout tools:
 1. Measuring tape
 2. Scratch awl
 3. Framing square
 4. Combination square
 5. Try square
 2. Describe the purpose and demonstrate the proper use of the following cutting and shaping tools:
 1. Hand plane
 2. Wood chisel
 3. Wood file/rasp
 4. Hand saw
 5. Glue scraper
 6. Putty knife
 3. Describe the purpose and demonstrate the proper use of the following striking tools:
 1. Claw hammer
 2. Nail set



3. Dead-blow hammer
4. Describe the purpose and demonstrate the proper use of the following drill bits:
 1. Twist
 2. Multi spur bit
 3. Spade
 4. Countersink
 5. Driver bits: Phillips, Square, Flat

Objective 2 Understand and demonstrate the safe use of portable power tools.

1. Describe the purpose and demonstrate the proper use of the following portable power tools:
 1. Pneumatic/power nail gun
 2. Power drills
 3. Router
 4. Finish sander
 5. Orbital sander

Objective 3 Understand and demonstrate the safe use of power machines.

1. Describe the purpose and demonstrate the proper use of the following sawing machines:
 1. Table saw
 2. Power miter saw
 3. Band Saw
2. Describe the purpose and demonstrate the proper use of the following surfacing machines:
 1. Surface planer
 2. Jointer
3. Describe the purpose and demonstrate the proper use of the following sanding machines:
 1. Disc sander
 2. Wide Belt Sander
 3. Spindle sander
 4. Edge sander
4. Describe the purpose and demonstrate the proper use of the following shaping machines:
 1. Router table
 2. Shaper
5. Describe the purpose and demonstrate the proper use of the following drilling machines:
 1. Drill press

Standard 2 Performance Evaluation included below (Optional)

STANDARD 3

STUDENTS WILL UNDERSTAND WOODWORKING DESIGN AND THEORY

Objective 1 Understand and demonstrate safe practices.

1. Demonstrate the ability to work safely in a cabinet shop following general safety rules.
2. Demonstrate the safe use of woodworking tools and machines.
3. Define SDS and know its purpose.
4. Pass a written safety test with a score of 100 percent

Objective 2 Understand and demonstrate the use of fasteners and adhesives.

1. Identify the various woodworking fasteners and the application of each.
 1. Nails
 2. Screws



3. Staples
2. Properly use an adhesive in the construction of a project.
3. Identify the different types of clamps.
 1. Bar
 2. "C"
 3. Spring
 4. Hand screw

Objective 3 Understand wood products and characteristics and procedures.

1. Identify softwoods.
 1. Softwoods – pine, red cedar.
2. Identify hardwoods.
 1. Hardwoods – cherry, oak, alder, walnut, maple.

Objective 4 Identify common manufactured materials.

1. Plywood
2. Particle board
3. MDF

Standard 3 Performance Evaluation included below (Optional)

STANDARD 4

STUDENTS WILL UNDERSTAND MILLING AND ASSEMBLY

Objective 1 Understand and demonstrate the use of joinery.

1. Identify the basic woodworking joints.
 1. Butt
 2. Miter
 3. Rabbet
 4. Dado
2. Construct a basic woodworking project using basic joints.

Objective 2 Understand and demonstrate the use of project components and hardware.

1. Complete a project.
2. Identify common cabinet/furniture hardware.
 1. Hinges – overlay, butt.
 2. Drawer guides (wood or metal).
 3. Knobs and pulls.

Objective 3 Understand and demonstrate sanding and finishing techniques.

1. Understand and properly apply the basic rules of sanding.
2. Properly prepare a surface for finishing.
3. Understand application methods of stain and clear finishes.

Standard 4 Performance Evaluation included below (Optional)

STANDARD 5

STUDENTS WILL BE ABLE TO PERFORM AUTOMATED MANUFACTURING PROCESSES USING CNC EQUIPMENT

Objective 1 Understand X, Y, Z axis.



- Objective 2 Understand vector lines.
- Objective 3 Define G-code.
- Objective 4 Create a tool path.
- Objective 5 Use a CNC machine to make a cut.

Standard 5 Performance Evaluation included below (Optional)

STANDARD 6 (Optional)

STUDENTS WILL BE ABLE TO UNDERSTAND AND APPLY PROFESSIONAL DEVELOPMENT SKILLS IN THE WORKPLACE.

Objective 1 Understand the need for professional development in school and the workplace.

1. Complete a personal inventory.
2. Set and meet goals.
3. Be self-motivated.
4. Know how to make decisions.
5. Know how to manage time.
6. Organize personal belongings and lab equipment.
7. Learn to communicate verbally.
8. Write effective communications.
9. Establish a personal reading program.
10. Develop effective work skills and attitudes.
11. Master a working knowledge of SkillsUSA. *
 1. Learn the acronym SkillsUSA.
 2. State the SkillsUSA motto.
 3. State the SkillsUSA creed.
 4. Learn the SkillsUSA colors.
 5. Describe the official SkillsUSA dress.
 6. Describe the procedure for becoming a SkillsUSA officer.

Objective 2 Understand the need for leadership skills.

1. Serve on a committee.
 1. Prepare an agenda.
2. Assist in planning a meeting.
3. Review basic parliamentary procedure.
4. Make a main motion.
5. Participate in a school project.
6. Attend a community meeting.
 1. Practice effective speaking.
7. Present a three- to five-minute talk.
8. Implement a leadership project.
 1. Master a working knowledge of SkillsUSA.
 2. Describe the meaning of the SkillsUSA emblem.
 3. State the SkillsUSA pledge.



4. Describe the duties of a SkillsUSA officer.

Objective 3 Understand the need for career planning.

1. Define your future occupation.
2. Survey employment opportunities.
3. Report on a trade journal article.
4. Explore opportunities for advanced training.
5. Conduct a worker interview.
6. Contact a professional association.
7. Explore entrepreneurship opportunities.
8. Give a talk about your career.
9. Review career goals.



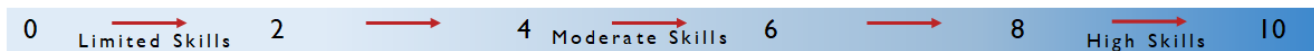
Woodworking Performance Standards (Optional)

Performance assessments may be completed and evaluated at any time during the course. The following performance skills are to be used in connection with the associated standards and exam. To pass the performance standard the student must attain a performance standard average of **8 or higher** on the rating scale. Students may be encouraged to repeat the objectives until they average **8 or higher**.

Students Name _____

Class _____

PERFORMANCE RATING SCALE



STANDARD 1 – Woodworking Design & Theory

Score:

- Understand woodworking design and theory.
 - Understand basic elements of the woodworking industry.
 - Understand basic plan elements.
 - Understand and demonstrate basic math and measuring concepts.

STANDARD 2 – Safety

Score:

- Understand and demonstrate the safe use of woodworking tools.
 - Understand and demonstrate the safe use of hand tools.
 - Understand and demonstrate the safe use of portable power tools.
 - Understand and demonstrate the safe use of power machines.

STANDARD 3 – Processing Materials

Score:

- Understand processing materials.
 - Understand and demonstrate safe practices.
 - Understand and demonstrate the use of fasteners and adhesives.
 - Understand wood products, characteristics, and procedures.
 - Identify common manufactured materials.

STANDARD 4 – Milling & Assembly

Score:

- Understand milling and assembly.
 - Understand and demonstrate the use of joinery.
 - Understand and demonstrate the use of project components and hardware.
 - Understand and demonstrate sanding and finishing techniques.

STANDARD 5 – Automated Manufacturing Processes

Score:

- Perform automated manufacturing processes using CNC equipment.
 - Understand X, Y, Z axis.
 - Understand vector lines.



- Define G-code.
- Create a tool path.
- Use a CNC machine to make a cut.

PERFORMANCE STANDARD AVERAGE SCORE: