

Title 7: Education K-12

Part 81: Trades Industrial

MISSISSIPPI
CURRICULUM FRAMEWORK
FOR
FURNITURE MANUFACTURING & UPHOLSTERING
(Program CIP: 48.0702 – Furniture Design & Manufacturing)

SECONDARY

2004

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Published by the:

Office of Vocational and Technical
Education
Mississippi Department of Education
Jackson, Mississippi

Research and Curriculum Unit for
Workforce Development
Vocational and Technical Education
Mississippi State University
Mississippi State, Mississippi

2004

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FOREWORD

The courses in this document reflect the following statutory requirements as found in Section 37-3-49, Mississippi Code of 1972, as amended:

§ 37-3-49. Adoption by school district of instructional program and management system; paperwork reduction.

(1) The State Department of Education shall provide an instructional program and establish guidelines and procedures for managing such program in the public schools as part of the State Program of Educational Accountability and Assessment of Performance as prescribed in Section 37-3-46. Public school districts may (a) elect to adopt the instructional program and management system provided by the State Department of Education, or (b) elect to adopt an instructional program and management system which meets or exceeds criteria established by the State Department of Education for such. This provision shall begin with the courses taught in Grades K-8 which contain skills tested through the Mississippi Basic Skills Assessment Program and shall proceed through all secondary school courses mandated for graduation and all secondary school courses in the Mississippi end-of-course testing program. Other state core objectives must be included in the district's instructional program as they are provided by the State Department of Education along with instructional practices, resources, evaluation items and management procedures. Districts are encouraged to adapt this program and accompanying procedures to all other instructional areas. The department shall provide that such program and guidelines, or a program and guidelines developed by a local school district which incorporates the core objectives from the curriculum structure are enforced through the performance-based accreditation system. It is the intent of the Legislature that every effort be made to protect the instructional time in the classroom and reduce the amount of paperwork which must be completed by teachers. The State Department of Education shall take steps to insure that school districts properly use staff development time to work on the districts' instructional management plans.

(2) The State Department of Education shall provide such instructional program and management guidelines which shall require for every public school district that:

(a) All courses taught in Grades K-8 which contain skills which are tested through the Mississippi Basic Skills Assessment Program, all secondary school courses mandated for graduation, and all courses in the end-of-course testing program shall include the State Department of Education's written list of learning objectives.

(b) The local school board must adopt the objectives that will form the core curriculum which will be systematically delivered throughout the district.

(c) The set of objectives provided by the State Department of Education must be accompanied by suggested instructional practices and resources that would help teachers organize instruction so as to promote student learning of the objectives. Objectives added by the school district must also be accompanied by suggested instructional practices and resources that would help teachers organize instruction. The instructional practices and resources that are identified are to be used as suggestions and not as requirements that teachers must follow. The goal of the program is to have students to achieve the desired objective and not to limit teachers in the way they teach.

(d) Standards for student performance must be established for each core objective in the local program and those standards establish the district's definition of mastery for each objective.

(e) There shall be an annual review of student performance in the instructional program against locally established standards. When weaknesses exist in the local instructional program, the district shall take action to improve student performance.

(3) The State Board of Education and the board of trustees of each school district shall adopt policies to limit and reduce the number and length of written reports that classroom teachers are required to prepare.

(4) This section shall not be construed to limit teachers from using their own professional skills to help students master instructional objectives, nor shall it be construed as a call for more detailed or complex lesson plans or any increase in testing at the local school district level.

(5) In the event any school district meets Level 4 or 5 accreditation requirements, the State Board of Education may, in its discretion, exempt such school district from the provisions of this section.

SOURCES: Laws, 1988, ch.487, §14; Laws, 1991, ch.423, §1; Laws, 1992, ch.519, §4 eff. from and after July 1, 1992.

Each secondary vocational-technical course consists of a series of instructional units which focus on a common theme. All units have been written using a common format which includes the following components:

- Unit Number and Title
- Suggested Time on Task - An estimated number of clock hours of instruction that should be required to teach the competencies and objectives of the unit. A minimum of 140 hours of instruction is required for each Carnegie unit credit. The curriculum framework should account for approximately 75-80 percent of the time in the course.
- Competencies and Suggested Objectives
 - A **Competency** represents a general concept or performance that students are expected to master as a requirement for satisfactorily completing a unit. Students will be expected to receive instruction on all competencies.
 - The Suggested Objectives represent the enabling and supporting knowledge and performances that will indicate mastery of the competency at the course level.
- Suggested Teaching Strategies - This section of each unit indicates strategies that can be used to enable students to master each suggested objective. Teachers should feel free to modify or enhance these suggestions based on needs of their students and resources available in order to provide optimum learning experiences for their students.
- Suggested Assessment Strategies - This section indicates strategies that can be used to measure student mastery. Examples of suggested strategies could include classroom discussions, laboratory exercises, and student assignments. Again, teachers should feel free to modify or enhance these suggested assessment strategies based on local needs and resources.
- Integrated Academic Topics, Workplace Skills, and Occupational Standards - This section identifies related academic topics in mathematics, science, and communications which are integrated into the content of the unit. It also identifies the general workplace skills as identified in the Secretary's Commission on Achieving Necessary Skills (SCANS) report as being critical for all workers in the 21st Century. Finally where applicable, occupational skills standards associated with the competencies and suggested objectives for the unit are also identified.

- Suggested References - This section indicates some of the primary instructional resources that may be used to teach the competencies and suggested objectives. Again, these resources are suggested and the list may be modified or enhanced based on needs and abilities of students and on available resources.

The following guidelines were used in developing the curriculum framework in this document and should be considered in developing local instructional management plans and daily lesson plans:

- The content of the courses in this document reflects approximately 75-80 percent of the time allocated to each course. The remaining 20-25 percent of each course should be developed at the local district level and may reflect:
 - Additional units of instruction within the course related to topics not found in the state framework.
 - Activities which develop a higher level of mastery on the existing competencies and suggested objectives.
 - Activities and instruction related to new technologies and concepts that were not prevalent at the time the current framework was developed/ revised.
 - Activities which implement components of the Mississippi Tech Prep initiative, including integration of academic and vocational-technical skills and coursework, school-to-work transition activities, and articulation of secondary and postsecondary vocational-technical programs.
 - Individualized learning activities to better prepare individuals in the courses for their chosen occupational area.
- Sequencing of the units of instruction within a course is left to the discretion of the local district. Naturally, foundation units related to topics such as safety, tool and equipment usage, and other basic skills should be taught first. Other units related to specific skill areas in the course, however, may be sequenced to take advantage of seasonal and climatic conditions, resources located outside of the school, and other factors.

ACKNOWLEDGMENTS

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PROGRAM DESCRIPTION

FURNITURE MANUFACTURING & UPHOLSTERING

Furniture Manufacturing & Upholstering is an instructional program designed to provide entry-level skills for students to become employed in the industry of upholstered furniture making, including skills in operation and care of tools, furniture styles, frame making, upholstery, sewing, and basic educational skills that are essential to the successful performance in this industry.

Skills and techniques taught in this program correlate with manufacturing standards as determined by the furniture industry.

COURSE OUTLINE

FURNITURE MANUFACTURING & UPHOLSTERING I

<u>Unit No.</u>	<u>Title</u>	<u>No. of Hours</u>
Unit 1	Introduction to Furniture Manufacturing	10
Unit 2	General Safety	10
Unit 3	Tool and Equipment Identification and Use	30
Unit 4	Measurement	10
Unit 5	Furniture Frame Patterns and Layout	70
Unit 6	Cutting and Assembling Frames	70
Unit 7	Special Topics in Furniture Manufacturing & Upholstering I	22.5

FURNITURE MANUFACTURING & UPHOLSTERING II

<u>Unit No.</u>	<u>Title</u>	<u>No. of Hours</u>
Unit 1	Review of General Safety	5
Unit 2	Furniture Upholstery Tools	10
Unit 3	Furniture Padding, Hardware, and Support System Components	30
Unit 4	Measure, Lay Out, and Cut Fabrics	30
Unit 5	Sewing Procedures	45
Unit 6	Furniture Upholstery	80
Unit 7	Special Topics in Furniture Manufacturing & Upholstering II	22.5

SECTION I:
CURRICULUM GUIDE
FOR
FURNITURE MANUFACTURING & UPHOLSTERING

FURNITURE MANUFACTURING & UPHOLSTERING I

FURNITURE MANUFACTURING & UPHOLSTERING I
UNIT 1: INTRODUCTION TO FURNITURE MANUFACTURING

(10 hours)

Competencies and Suggested Objectives:

1. Explain the requirements and working conditions for employment in the upholstered furniture manufacturing industry.
 - a. Describe employment opportunities in the upholstered furniture industry.
 - b. Describe the education and experience requirements for employment in the upholstered furniture industry.
 - c. Describe earning and working conditions in the upholstered furniture industry.
 - d. Describe employability skills necessary for employment in the furniture manufacturing industry.
2. Explain the local school rules and regulations.
 - a. Describe local school rules found in the student handbook.
 - b. Describe the shop and facilities requirements.
3. Describe SkillsUSA activities pertaining to furniture manufacturing.
 - a. Describe the purposes of the SkillsUSA organization.
 - b. Describe the leadership development activities of SkillsUSA.
 - c. Describe the personal development activities associated with SkillsUSA.
 - d. Describe the skills competition events available through SkillsUSA.

Suggested Teaching Strategies:

1. Explain the requirements and working conditions for employment in the upholstered furniture manufacturing industry.
 - a. Oral/written report to identify employment opportunities in the upholstered furniture industry, using appropriate technology and materials.
 - b. Oral/written assignment to identify education and experience requirements for employment in the upholstered furniture industry.
 - c. Oral/written assignment to examine earning and working conditions in the upholstered furniture industry.
 - d. Discuss employability skills necessary for employment in the furniture manufacturing industry.
2. Explain the local school rules and regulations.
 - a. Discuss local school rules found in the student handbook.
 - b. Tour facility and explain shop and facilities requirements.
3. Describe SkillsUSA activities pertaining to furniture manufacturing.
 - a. Oral/written assignment to state the purposes of the SkillsUSA organization.
 - b. Assist students to participate in the leadership development activities of SkillsUSA.

- c. Assist students to participate in the personal development activities of SkillsUSA.
- d. Assist students to participate in the skills competition events available through SkillsUSA.

Suggested Assessment Strategies:

1. Explain the requirements and working conditions for employment in the upholstered furniture manufacturing industry.
 - a. Grade on oral/written report.
 - b. Grade on assignment.
 - c. Grade on assignment.
 - d. Teacher observation and student participation in class discussion.
2. Explain the local school rules and regulations.
 - a. Test on local school rules.
 - b. Student participation and completion of checklist on shop and facilities requirements.
3. Describe the SkillsUSA activities pertaining to furniture manufacturing.
 - a. Teacher observation.
 - b. Student participation in class activity.
 - c. Student participation in class activity.
 - d. Student participation in class activity.

Standards

Academic Standards

- A1 Recognize, classify, and use real numbers and their properties.
- B7 Investigate the interdependence and interactions that occur within an ecosystem.
- E1 Produce writing which reflects increasing proficiency through planning, writing, revising, and editing and which is specific to audience and purpose.
- E2 Communicate ideas for a variety of school and other life situations through listening, speaking, and reading aloud.
- E3 Read, evaluate, and use print, non-print, and technological sources to research issues and problems, to present information, and to complete projects.
- E4 Work individually and as a member of a team to analyze and interpret information, to make decisions, to solve problems, and to reflect, using increasingly complex and abstract thinking.
- E5 Complete oral and written presentations which exhibit interaction and consensus within a group.
- E9 Sustain progress toward fluent control of grammar, mechanics, and usage of standard English in the context of writing and speaking.
- E10 Use language and critical thinking strategies to serve as tools for learning.
- H1 Explain how geography, economics, and politics have influenced the historical development of the United States in the global community.

- H2 Describe the impact of science and technology on the historical development of the United States in the global community.
- H4 Demonstrate the ability to use social studies tools (e.g., timelines, maps, globes, resources, graphs, a compass, technology, etc.).
- H5 Analyze the contributions of Americans to the ongoing democratic process to include civic responsibilities.

Workplace Skills

- WP2 Acquires, evaluates, organizes and maintains, and interprets/communicates information, including the use of computers.
- WP3 Practices interpersonal skills related to careers including team member participation, teaching other people, serving clients/customers, exercising leadership, negotiation, and working with culturally diverse.
- WP6 Employs thinking skills including creative thinking, decision making, problem solving, reasoning, and knowing how to learn.
- WP7 Basic Skills: Employs basic academic skills including reading, writing, arithmetic and mathematics, speaking, and listening.
- WP8 Personal Qualities: Practices work ethics related to individual responsibility, integrity, honesty, and personal management.

National Educational Technology Standards for Students

- T1 Basic operations and concepts
- T2 Social, ethical, and human issues
- T3 Technology productivity tools
- T4 Technology communications tools
- T5 Technology research tools

Suggested References

Choices [Computer software]. (2004). Oroville, WA: Bridges.com Co.

Grimes, L. A., Jr. (1985). *Furniture repairer and upholsterer: Student's manual*. Austin, TX: Extension and Materials Center, Division of Continuing Education, University of Texas at Austin.

High School Career Centers.

Local School District Handbook.

Mississippi manufacturing wage, salary & fringe benefit survey. (2001). Compiled by: North Mississippi Industrial Development Association. Under contract to: Mississippi Development Authority.

SkillsUSA-VICA. (2001). *Student Handbook*. Washington, DC: Vocational Industrial Clubs of America (VICA).

Additional Resources:

Community resource professionals.

What do employers expect from me? (Poster). Available from Tech Prep Office, Mississippi Department of Education.

Videos:

Discover a furniture career. (1996). High Point, NC: American Furniture Manufacturers Association.

The Brookwood showroom. (1990). Pontotoc, MS: Brookwood Industries.

FURNITURE MANUFACTURING & UPHOLSTERING I
UNIT 2: GENERAL SAFETY

(10 hours)

Competencies and Suggested Objectives:

1. Explain the safety requirements for upholstered manufacturing.
 - a. Describe personal safety rules for working in a shop/lab and industry, including OSHA regulations.
 - b. Describe the general workplace safety rules.
 - c. Describe the proper use of fire extinguishers and classes of fires.
 - d. Identify standard industry Safety Color-Coding System.
 - e. Describe procedures for safety handling heavy objects.
 - f. Describe accident reporting procedures.
2. Identify hazardous materials that may be found on a job site and describe procedures for handling/avoidance or removal of materials.
 - a. Interpret a Material Safety Data Sheet (MSDS).
 - b. Describe the approved storage procedures for flammable materials found in the upholstered furniture shop.
 - c. Describe approved procedures for disposal of hazardous materials.

Suggested Teaching Strategies:

1. Explain the safety requirements for upholstered manufacturing.
 - a. Discuss personal safety rules for working in a shop/lab and industry, including OSHA regulations.
 - b. Discuss general workplace safety rules.
 - c. Demonstrate procedures for the proper use of fire extinguishers and classes of fires.
 - d. Oral presentation using visual aids (poster, PowerPoint presentation); explain standard industry Safety Color-Coding System.
 - e. Demonstrate procedures for safely handling heavy objects.
 - f. Oral/written assignment to illustrate accident reporting procedures.
2. Identify hazardous materials that may be found on a job site and describe procedures for handling/avoidance or removal of materials.
 - a. Using a specific chemical product that is typically found in a furniture upholstery shop, discuss and explain how to use an MSDS.
 - b. Discuss the approved storage procedures for flammable materials found in the upholstered furniture shop.
 - c. Discuss approved procedures for disposal of hazardous materials.

Suggested Assessment Strategies:

1. Explain the safety requirements for upholstered manufacturing.
 - a. Test.
 - b. Test.
 - c. Checklist, using a rubric.
 - d. Test.
 - e. Test.
 - f. Grade on assignment.
2. Identify hazardous materials that may be found on a job site and describe procedures for handling/avoidance or removal of materials.
 - a. Grade on student activity sheet.
 - b. Teacher observation and student class participation.
 - c. Teacher observation and student class participation.

Standards

Academic Standards

- B1 Utilize critical thinking and scientific problem solving in designing and performing biological research and experimentation.
- B4 Investigate the transfer of energy from the sun to living systems.
- B7 Investigate the interdependence and interactions that occur within an ecosystem.
- E1 Produce writing which reflects increasing proficiency through planning, writing, revising, and editing and which is specific to audience and purpose.
- E2 Communicate ideas for a variety of school and other life situations through listening, speaking, and reading aloud.
- E3 Read, evaluate, and use print, non-print, and technological sources to research issues and problems, to present information, and to complete projects.
- E4 Work individually and as a member of a team to analyze and interpret information, to make decisions, to solve problems, and to reflect, using increasingly complex and abstract thinking.
- E5 Complete oral and written presentations which exhibit interaction and consensus within a group.
- E9 Sustain progress toward fluent control of grammar, mechanics, and usage of standard English in the context of writing and speaking.
- E10 Use language and critical thinking strategies to serve as tools for learning.
- H1 Explain how geography, economics, and politics have influenced the historical development of the United States in the global community.
- H5 Analyze the contributions of Americans to the ongoing democratic process to include civic responsibilities.

Workplace Skills

- WP2 Acquires, evaluates, organizes and maintains, and interprets/communicates information, including the use of computers.
- WP3 Practices interpersonal skills related to careers including team member participation, teaching other people, serving clients/customers, exercising leadership, negotiation, and working with culturally diverse.
- WP6 Employs thinking skills including creative thinking, decision making, problem solving, reasoning, and knowing how to learn.
- WP7 Basic Skills: Employs basic academic skills including reading, writing, arithmetic and mathematics, speaking, and listening.
- WP8 Personal Qualities: Practices work ethics related to individual responsibility, integrity, honesty, and personal management.

National Educational Technology Standards for Students

- T2 Social, ethical, and human issues
- T3 Technology productivity tools
- T4 Technology communications tools
- T5 Technology research tools
- T6 Technology problem-solving and decision-making tools

Suggested References

- Developing safety skills for shop or home.* (2002). Winterville, GA: American Association for Vocational Instructional Materials & Tuscaloosa, AL: Resource Center for Technology.
- Grimes, L. A., Jr. (1985). *Furniture repairer and upholsterer: Student's manual.* Austin, TX: Extension and Materials Center, Division of Continuing Education, University of Texas at Austin.
- Kicklighter, C. E., & Wagner, W. H. (2004). *Modern woodworking.* Tinley Park, IL: Goodheart-Willcox.

Local School District Handbook.

Additional Resources:

Community resource professionals.

What do employers expect from me? (Poster). Available from Tech Prep Office, Mississippi Department of Education.

Videos:

ShopWare series. (1990). Vocational Educational Software and Videos.
Aberdeen, WA: Shopware.

FURNITURE MANUFACTURING & UPHOLSTERING I
UNIT 3: TOOL AND EQUIPMENT IDENTIFICATION AND USE

(30 hours)

Competencies and Suggested Objectives:

1. Demonstrate use of hand tools found in upholstered furniture manufacturing.
 - a. Identify hand tools used in frame building.
 - b. Demonstrate use of hand tools used in frame building.
2. Demonstrate use of power tools found in upholstered furniture frame manufacturing.
 - a. Identify types of air powered fasteners used in furniture manufacturing.
 - b. Demonstrate the use of air powered fasteners used in furniture manufacturing.
 - c. Identify power tools used in frame building.
 - d. Demonstrate use of power tools used in frame building.
 - e. Identify machines used in frame building.
 - f. Describe the functions of machines used in frame building.
 - g. Describe the safety rules of each machine used in frame building.
 - h. Demonstrate use of each machine used in frame building.
 - i. Perform maintenance procedures on each machine used in frame building.

Suggested Teaching Strategies:

1. Demonstrate use of hand tools found in upholstered furniture manufacturing.
 - a. Practical exercise to identify hand tools used in frame building.
 - b. Demonstrate procedures for use of hand tools used in frame building.
2. Demonstrate use of power tools found in upholstered furniture frame manufacturing.
 - a. Practical exercise to identify types of air powered fasteners used in furniture manufacturing.
 - b. Demonstrate procedures for the use of air powered fasteners used in furniture manufacturing.
 - c. Practical exercise to identify power tools used in frame building.
 - d. Demonstrate procedures for use of power tools used in frame building.
 - e. Practical exercise to identify machines used in frame building.
 - f. Oral/written assignment to describe the functions of machines used in frame building.
 - g. Oral/written assignment to describe safety rules of each machine used in frame building.
 - h. Practical exercise to demonstrate use of each machine used in frame building.
 - i. Practical exercise to perform maintenance procedures on each machine used in frame building.

Suggested Assessment Strategies:

1. Demonstrate use of hand tools found in upholstered furniture manufacturing.
 - a. Checklist - Identify hand tools used in frame building.
 - b. Checklist - Demonstrate use of hand tools used in frame building.
2. Demonstrate use of power tools found in upholstered furniture frame manufacturing.
 - a. Checklist - Identify types of air powered fasteners used in furniture manufacturing.
 - b. Checklist - Demonstrate the use of air powered fasteners used in furniture manufacturing.
 - c. Checklist - Identify power tools used in frame building.
 - d. Checklist - Demonstrate use of power tools used in frame building.
 - e. Checklist - Identify machines used in frame building.
 - f. Grade on assignment- Describe the functions of machines used in frame building.
 - g. Grade on assignment- Describe safety rules of each machine used in frame building.
 - h. Checklist - Demonstrate use of each machine used in frame building.
 - i. Checklist - Perform maintenance procedures on each machine used in frame building.

Standards

Academic Standards

- A2 Recognize, create, extend, and apply patterns, relations, and functions and their applications.
- A5 Utilize various formulas in problem-solving situations.
- B1 Utilize critical thinking and scientific problem solving in designing and performing biological research and experimentation.
- E1 Produce writing which reflects increasing proficiency through planning, writing, revising, and editing and which is specific to audience and purpose.
- E2 Communicate ideas for a variety of school and other life situations through listening, speaking, and reading aloud.
- E3 Read, evaluate, and use print, non-print, and technological sources to research issues and problems, to present information, and to complete projects.
- E4 Work individually and as a member of a team to analyze and interpret information, to make decisions, to solve problems, and to reflect, using increasingly complex and abstract thinking.
- E5 Complete oral and written presentations which exhibit interaction and consensus within a group.
- E6 Explore cultural contributions to the history of the English language and its literature.
- E9 Sustain progress toward fluent control of grammar, mechanics, and usage of standard English in the context of writing and speaking.

- E10 Use language and critical thinking strategies to serve as tools for learning.
- H1 Explain how geography, economics, and politics have influenced the historical development of the United States in the global community.
- H2 Describe the impact of science and technology on the historical development of the United States in the global community.
- H3 Describe the relationship of people, places, and environments through time

Workplace Skills

- WP2 Acquires, evaluates, organizes and maintains, and interprets/communicates information including the use of computers.
- WP3 Practices interpersonal skills related to careers including team member participation, teaching other people, serving clients/customers, exercising leadership, negotiation, and working with culturally diverse.
- WP6 Employs thinking skills including creative thinking, decision making, problem solving, reasoning, and knowing how to learn.

National Educational Technology Standards for Students

- T2 Social, ethical, and human issues

Suggested References

Developing safety skills for shop or home. (2002). Winterville, GA: American Association for Vocational Instructional Materials & Tuscaloosa, AL: Resource Center for Technology.

Feirer, J. L. (2002). *Wood technology and processes.* New York: Glencoe/McGraw-Hill.

Grimes, L. A., Jr. (1985). *Furniture repairer and upholsterer: Student's manual.* Austin, TX: Extension and Materials Center, Division of Continuing Education, University of Texas at Austin.

Kicklighter, C. E., & Wagner, W. H. (2004). *Modern woodworking.* Tinley Park, IL: Goodheart-Willcox.

Zimmerman, F. W. (1992). *Upholstering methods.* Tinley Park, IL: Goodheart-Willcox.

Zimmerman, F. W., & McWard, L. J. (1999). *Exploring woodworking.* Tinley Park, IL: Goodheart-Willcox.

Videos:

ShopWare series. (1990). Vocational Educational Software and Videos. Aberdeen, WA: Shopware.

FURNITURE MANUFACTURING & UPHOLSTERING I
UNIT 4: MEASUREMENT

(10 hours)

Competencies and Suggested Objectives:

1. Identify types of measuring devices used in furniture manufacturing.
 - a. Identify types of measuring devices used in furniture manufacturing, including tape measure, rules, squares, and compass.
 - b. Demonstrate ability to use types of measuring devices used in furniture manufacturing, including tape measure, rules, squares, and compass.
2. Perform mathematics essential to furniture manufacturing occupations.
 - a. Calculate fractions, including addition, subtraction, multiplication, and division.
 - b. Calculate board feet measurements in lumber.

Suggested Teaching Strategies:

1. Identify types of measuring devices used in furniture manufacturing.
 - a. Practical exercise to identify types of measuring devices used in furniture manufacturing, including tape measure, rules, squares, and compass.
 - b. Practical exercise to demonstrate ability to use types of measuring devices used in furniture manufacturing, including tape measure, rules, squares, and compass.
2. Perform mathematics essential to furniture manufacturing occupations.
 - a. Practical exercise and handout to calculate fractions, including addition, subtraction, multiplication, and division.
 - b. Practical exercise and handout to calculate board feet measurements in lumber.

Suggested Assessment Strategies:

1. Identify types of measuring devices used in furniture manufacturing.
 - a. Checklist - Identify types of measuring devices used in furniture manufacturing, including tape measure, rules, squares, and compass.
 - b. Checklist - Demonstrate ability to use types of measuring devices used in furniture manufacturing, including tape measure, rules, squares, and compass.
2. Perform mathematics essential to furniture manufacturing occupations.
 - a. Grade on handout - Calculate fractions, including addition, subtraction, multiplication, and division.
 - b. Grade on handout - Calculate board feet measurements in lumber.

Standards

Academic Standards

- A1 Recognize, classify, and use real numbers and their properties.
- A2 Recognize, create, extend, and apply patterns, relations, and functions and their applications.
- A3 Simplify algebraic expressions, solve and graph equations, inequalities and systems in one and two variables.
- A4 Explore and communicate the characteristics and operations of polynomials.
- A5 Utilize various formulas in problem-solving situations.
- A6 Communicate using the language of algebra.
- A8 Analyze data and apply concepts of probability.
- B1 Utilize critical thinking and scientific problem solving in designing and performing biological research and experimentation.
- E2 Communicate ideas for a variety of school and other life situations through listening, speaking, and reading aloud.
- E4 Work individually and as a member of a team to analyze and interpret information, to make decisions, to solve problems, and to reflect, using increasingly complex and abstract thinking.
- E10 Use language and critical thinking strategies to serve as tools for learning.
- H2 Describe the impact of science and technology on the historical development of the United States in the global community.

Workplace Skills

- WP2 Acquires, evaluates, organizes and maintains, and interprets/communicates information, including the use of computers.
- WP3 Practices interpersonal skills related to careers including team member participation, teaching other people, serving clients/customers, exercising leadership, negotiation, and working with culturally diverse.
- WP6 Employs thinking skills including creative thinking, decision making, problem solving, reasoning, and knowing how to learn.
- WP7 Basic Skills: Employs basic academic skills including reading, writing, arithmetic and mathematics, speaking, and listening.
- WP8 Personal Qualities: Practices work ethics related to individual responsibility, integrity, honesty, and personal management.

National Educational Technology Standards for Students

- T2 Social, ethical, and human issues
- T3 Technology productivity tools
- T4 Technology communications tools
- T5 Technology research tools

Suggested References

Grimes, L. A., Jr. (1985). *Furniture repairer and upholsterer: Student's manual*. Austin, TX: Extension and Materials Center, Division of Continuing Education, University of Texas at Austin.

Kicklighter, C. E., & Wagner, W. H. (2004). *Modern woodworking*. Tinley Park, IL: Goodheart-Willcox.

Videos:

ShopWare series. (1990). Vocational Educational Software and Videos. Aberdeen, WA: Shopware.

FURNITURE MANUFACTURING & UPHOLSTERING I
UNIT 5: FURNITURE FRAME PATTERNS AND LAYOUT

(70 hours)

Competencies and Suggested Objectives:

1. Identify terms and materials commonly used in frame manufacture.
 - a. Define terms associated with frame patterns and layout.
 - b. Identify woods to use in different applications on frames.
2. Identify types and styles of upholstered furniture.
 - a. Describe types of furniture.
 - b. Describe the most common furniture styles.
3. Create a working drawing.
 - a. Read a working drawing, including dimensions and different features.
 - b. Develop a working drawing, including concept and dimensions using computer technology.
4. Apply a working drawing, including the layout and cutting of materials for a part from a working drawing.
 - a. Lay out patterns for the greatest yield.
 - b. Lay out patterns and duplicate parts.
 - c. Lay out patterns and duplicate parts using computer technology.
5. Prepare a bill of materials for the manufacture of a furniture frame.
 - a. Itemize the materials and supplies.
 - b. Determine quantities.
 - c. Determine costs.

Suggested Teaching Strategies:

1. Identify terms and materials commonly used in frame manufacture.
 - a. Oral/written assignment to define terms associated with frame patterns and layout.
 - b. Describe woods to use in different applications on frames.
2. Identify types and styles of upholstered furniture.
 - a. Discuss and use illustrations of the types of furniture.
 - b. Discuss and use illustrations of the most common furniture styles.
3. Create a working drawing.
 - a. Practical activity - Read a working drawing, including dimensions and different features.
 - b. Practical activity - Develop a working drawing, including concept and dimensions using computer technology.
4. Apply a working drawing, including the layout and cutting of materials for a part from a working drawing.
 - a. Practical activity - Lay out patterns for the greatest yield.
 - b. Practical activity - Lay out patterns and duplicate parts.
 - c. Practical activity - Lay out patterns and duplicate parts using computer technology.

5. Prepare a bill of materials for the manufacture of a furniture frame.
 - a. Practical activity - Itemize the materials and supplies.
 - b. Practical activity using teacher-prepared worksheet - Determine quantities.
 - c. Practical activity using teacher-prepared worksheet - Determine costs.

Suggested Assessment Strategies:

1. Identify terms and materials commonly used in frame manufacture.
 - a. Grade on assignment.
 - b. Checklist.
2. Identify types and styles of upholstered furniture.
 - a. Checklist.
 - b. Teacher observation and student class participation.
3. Create a working drawing.
 - a. Teacher observation and student class participation.
 - b. Checklist.
4. Apply a working drawing, including the layout and cutting of materials for a part from a working drawing.
 - a. Checklist.
 - b. Checklist.
 - c. Checklist.
5. Prepare a bill of materials for the manufacture of a furniture frame.
 - a. Grade on worksheet.
 - b. Grade on worksheet.
 - c. Grade on worksheet.

Standards

Academic Standards

- A1 Recognize, classify, and use real numbers and their properties.
- A2 Recognize, create, extend, and apply patterns, relations, and functions and their applications.
- A3 Simplify algebraic expressions, solve and graph equations, inequalities and systems in one and two variables.
- A4 Explore and communicate the characteristics and operations of polynomials.
- A5 Utilize various formulas in problem-solving situations.
- A6 Communicate using the language of algebra.
- B1 Utilize critical thinking and scientific problem solving in designing and performing biological research and experimentation.
- B4 Investigate the transfer of energy from the sun to living systems.
- E1 Produce writing which reflects increasing proficiency through planning, writing, revising, and editing and which is specific to audience and purpose.
- E2 Communicate ideas for a variety of school and other life situations through listening, speaking, and reading aloud.

- E3 Read, evaluate, and use print, non-print, and technological sources to research issues and problems, to present information, and to complete projects.
- E4 Work individually and as a member of a team to analyze and interpret information, to make decisions, to solve problems, and to reflect, using increasingly complex and abstract thinking.
- E5 Complete oral and written presentations which exhibit interaction and consensus within a group.
- E10 Use language and critical thinking strategies to serve as tools for learning.
- H1 Explain how geography, economics, and politics have influenced the historical development of the United States in the global community.
- H2 Describe the impact of science and technology on the historical development of the United States in the global community.
- H3 Describe the relationship of people, places, and environments through time.
- H4 Demonstrate the ability to use social studies tools (e.g., timelines, maps, globes, resources, graphs, a compass, technology, etc.).

Workplace Skills

- WP2 Acquires, evaluates, organizes and maintains, and interprets/communicates information, including the use of computers.
- WP3 Practices interpersonal skills related to careers including team member participation, teaching other people, serving clients/customers, exercising leadership, negotiation, and working with culturally diverse.
- WP6 Employs thinking skills including creative thinking, decision making, problem solving, reasoning, and knowing how to learn.
- WP7 Basic Skills: Employs basic academic skills including reading, writing, arithmetic and mathematics, speaking, and listening.
- WP8 Personal Qualities: Practices work ethics related to individual responsibility, integrity, honesty, and personal management.

National Educational Technology Standards for Students

- T3 Technology productivity tools
- T4 Technology communications tools
- T5 Technology research tools
- T6 Technology problem-solving and decision-making tools

Suggested References

- Grimes, L. A., Jr. (1985). *Furniture repairer and upholsterer: Student's manual*. Austin, TX: Extension and Materials Center, Division of Continuing Education, University of Texas at Austin.
- Kicklighter, C. E., & Kicklighter, J. C. (2001). *Upholstery fundamentals*. Tinley Park, IL: Goodheart-Willcox.

Kicklighter, C. E., & Wagner, W. H. (2004). *Modern woodworking*. Tinley Park, IL: Goodheart-Willcox.

Zimmerman, F. W. (1992). *Upholstering methods*. Tinley Park, IL: Goodheart-Willcox.

Videos:

ShopWare series. (1990). Vocational Educational Software and Videos. Aberdeen, WA: Shopware.

The Brookwood showroom. (1990). Pontotoc, MS: Brookwood Industries.

**FURNITURE MANUFACTURING & UPHOLSTERING I
UNIT 6: CUTTING AND ASSEMBLING FRAMES**

(70 hours)

Competencies and Suggested Objectives:

1. Cut frames for upholstered furniture to specifications.
 - a. Cut parts to length using the radial arm saw.
 - b. Cut parts to width using the table saw.
 - c. Perform scroll cuts using the bandsaw.
 - d. Drill holes for dowel pins with the drill press.
 - e. Observe use of CNC equipment in cutting frames.
2. Assemble frame parts to specifications using fastening devices.
 - a. Assemble sofa and chair frames.
 - b. Assemble recliner frames.

Suggested Teaching Strategies:

1. Cut frames for upholstered furniture to specifications.
 - a. Practical exercise to cut parts to length using the radial arm saw.
 - b. Practical exercise to cut parts to width using the table saw.
 - c. Practical exercise to perform scroll cuts using the bandsaw.
 - d. Practical exercise to drill holes for dowel pins with the drill press.
 - e. Using field trips, media, and/or job shadowing, students will observe and prepare a report on the use of CNC equipment in cutting frames.
2. Assemble frame parts to specifications using fastening devices.
 - a. Practical exercise to assemble sofa and chair frames.
 - b. Practical exercise to assemble recliner frame.

Suggested Assessment Strategies:

1. Cut frames for upholstered furniture to specifications.
 - a. Teacher observation and checklist.
 - b. Teacher observation and checklist.
 - c. Teacher observation and checklist.
 - d. Teacher observation and checklist.
 - e. Grade on student report.
2. Assemble frame parts to specifications using fastening devices.
 - a. Teacher observation and checklist.
 - b. Teacher observation and checklist.

Standards

Academic Standards

- A1 Recognize, classify, and use real numbers and their properties.
- A2 Recognize, create, extend, and apply patterns, relations, and functions and their applications.
- A3 Simplify algebraic expressions, solve and graph equations, inequalities and systems in one and two variables.
- A4 Explore and communicate the characteristics and operations of polynomials.
- A5 Utilize various formulas in problem-solving situations.
- A6 Communicate using the language of algebra.
- B1 Utilize critical thinking and scientific problem solving in designing and performing biological research and experimentation.
- E1 Produce writing which reflects increasing proficiency through planning, writing, revising, and editing and which is specific to audience and purpose.
- E2 Communicate ideas for a variety of school and other life situations through listening, speaking, and reading aloud.
- E3 Read, evaluate, and use print, non-print, and technological sources to research issues and problems, to present information, and to complete projects.
- E4 Work individually and as a member of a team to analyze and interpret information, to make decisions, to solve problems, and to reflect, using increasingly complex and abstract thinking.
- E5 Complete oral and written presentations which exhibit interaction and consensus within a group.
- E10 Use language and critical thinking strategies to serve as tools for learning.
- H2 Describe the impact of science and technology on the historical development of the United States in the global community.

Workplace Skills

- WP2 Acquires, evaluates, organizes and maintains, and interprets/communicates information, including the use of computers.
- WP3 Practices interpersonal skills related to careers including team member participation, teaching other people, serving clients/customers, exercising leadership, negotiation, and working with culturally diverse.
- WP6 Employs thinking skills including creative thinking, decision making, problem solving, reasoning, and knowing how to learn.
- WP7 Basic Skills: Employs basic academic skills including reading, writing, arithmetic and mathematics, speaking, and listening.
- WP8 Personal Qualities: Practices work ethics related to individual responsibility, integrity, honesty, and personal management.

National Educational Technology Standards for Students

- T2 Social, ethical, and human issues
- T3 Technology productivity tools
- T4 Technology communications tools
- T5 Technology research tools
- T6 Technology problem-solving and decision-making tools

Suggested References

- Grimes, L. A., Jr. (1985). *Furniture repairer and upholsterer: Student's manual*. Austin, TX: Extension and Materials Center, Division of Continuing Education, University of Texas at Austin.
- Kicklighter, C. E., & Kicklighter, J. C. (2001). *Upholstery fundamentals*. Tinley Park, IL: Goodheart-Willcox.
- Kicklighter, C. E., & Wagner, W. H. (2004). *Modern woodworking*. Tinley Park, IL: Goodheart-Willcox.
- Zimmerman, F. W. (1992). *Upholstering methods*. Tinley Park, IL: Goodheart-Willcox.
- Zimmerman, F. W., & McWard, L. J. (1999). *Exploring woodworking*. Tinley Park, IL: Goodheart-Willcox.

FURNITURE MANUFACTURING & UPHOLSTERY I

UNIT 7: SPECIAL TOPICS IN FURNITURE

(22.5 hours)

MANUFACTURING & UPHOLSTERING I (ongoing)

(NOTE: Competencies and suggested objectives in this unit should be integrated into other instructional units throughout the year. This unit is designed as ongoing and is repeated in both years of the program; however, students should be expected to continually observe and report on current topics.)

Competencies and Suggested Objectives:

1. Investigate new and emerging technologies, practices, trends, and issues associated with Furniture Manufacturing & Upholstering.
 - a. Recognize new and emerging technologies associated with Furniture Manufacturing & Upholstering.
 - b. Recognize current trends or issues associated with Furniture Manufacturing & Upholstering.
2. Complete school-to-careers activities related to Furniture Manufacturing & Upholstering.
 - a. Participate in a school-to-careers activity (shadowing, mentoring, career fair, etc.) related to Furniture Manufacturing & Upholstering.
 - b. Investigate educational opportunities related to Furniture Manufacturing & Upholstering at the postsecondary level.
 - c. Describe national standards and certification/licensing procedures related to Furniture Manufacturing & Upholstering.
 - d. Describe the role of trade organizations, associations, and unions as related to Furniture Manufacturing & Upholstering.
3. Demonstrate related academic skills and workplace skills associated with Furniture Manufacturing & Upholstering.
 - a. Complete a cooperative project (paper, presentation, or demonstration) associated with an academic subject and Furniture Manufacturing & Upholstering.
 - b. Practice human relations skills (team participation, client/customer service, leadership, negotiation, working with culturally diverse populations, etc.) related to Furniture Manufacturing & Upholstering.
 - c. Research work ethics and employer expectations of employees in Furniture Manufacturing & Upholstering.
4. Investigate the concepts of quality assurance as related to Furniture Manufacturing & Upholstering.
 - a. Describe quality concepts and methods for measuring quality related to Furniture Manufacturing & Upholstering.
 - b. Apply quality concepts in the Furniture Manufacturing & Upholstering laboratory.

5. Examine trends and changes related to Furniture Manufacturing & Upholstering and global economic factors.
 - a. Define and discuss the concept of global economics and competition.
 - b. Describe global economic factors and competition as related to Furniture Manufacturing & Upholstering.
 - c. Identify regions and other countries which compete in Furniture Manufacturing & Upholstering.

Suggested Teaching Strategies:

1. Investigate new and emerging technologies, practices, trends, and issues associated with Furniture Manufacturing & Upholstering.
 - a. Have students conduct research and prepare a report on a new or emerging technology associated with Furniture Manufacturing & Upholstering.
 - b. Have students conduct research and prepare a report on a current trend or issue associated with Furniture Manufacturing & Upholstering.
2. Complete school-to-careers activities related to Furniture Manufacturing & Upholstering.
 - a. Have students participate in a school-to-careers activity such as a shadowing or mentoring experience, or a career fair.
 - b. Have students investigate postsecondary educational opportunities at the community/junior college, four-year college, and apprenticeship level.
 - c. Have students investigate any national standards that apply to Furniture Manufacturing & Upholstering and report on any national or regional certification or licensure programs or agencies.
 - d. Identify trade associations, professional organizations, and unions associated with Furniture Manufacturing & Upholstering and describe how their role affects employees.
3. Demonstrate related academic skills and workplace skills associated with Furniture Manufacturing & Upholstering.
 - a. Have students complete a cooperative project such as paper, presentation or demonstration associated with a related academic subject.
 - b. Have students practice human relations skills such as team participation, client/customer service, negotiation, etc. related to Furniture Manufacturing & Upholstering.
 - c. Have students research acceptable work ethics and determine employer expectations for persons employed in Furniture Manufacturing & Upholstering by interviewing employers, supervisors, and employees and reporting back to the class.
4. Investigate the concepts of quality assurance as related to Furniture Manufacturing & Upholstering.
 - a. Lead a discussion of the concepts of quality assurance and the methods that can be used to measure quality and gauge quality improvement as related to Furniture Manufacturing & Upholstering.

- b. Have students apply quality concepts in the Furniture Manufacturing & Upholstering by measuring the quality of their work and charting the increase in quality over time.
5. Examine trends and changes related to Furniture Manufacturing & Upholstering and global economic factors.
 - a. Lead a discussion of the different concepts of global economics and competition as related to Furniture Manufacturing & Upholstering.
 - b. Lead a discussion, using current newspaper and magazine articles, on specific issues related to Furniture Manufacturing & Upholstering and global economics and competition. Identify other countries which compete with products made in the United States.
 - c. Have students determine other regions and countries that affect competition in Furniture Manufacturing & Upholstering and describe ways in which this competition affects workers.

Suggested Assessment Strategies:

1. Investigate new and emerging technologies, practices, trends, and issues associated with Furniture Manufacturing & Upholstering.
 - a. Grade on student report on new and emerging technology.
 - b. Grade on student report on current trend or issue.
2. Complete school-to-careers activities related to Furniture Manufacturing & Upholstering.
 - a. Grade on student participation in school-to-careers activity.
 - b. Grade on student investigation of postsecondary educational opportunities.
 - c. Report on national certification/licensure agencies.
 - d. Report on trade organizations, professional organizations, and unions and their roles.
3. Demonstrate related academic skills and workplace skills associated with Furniture Manufacturing & Upholstering.
 - a. Grade on cooperative project.
 - b. Grade on practice of human relations skills.
 - c. Grade on report on work ethics and employer expectations.
4. Investigate the concepts of quality assurance as related to Furniture Manufacturing & Upholstering.
 - a. Test on quality concepts and methods for measuring quality.
 - b. Grade on student assignment to chart quality increase over time in school laboratory or work experience.
5. Examine trends and changes related to Furniture Manufacturing & Upholstering and global economic factors.
 - a. Grade on report on concepts of global economics and competition.
 - b. Grade on report on global economics and competition as related to Furniture Manufacturing & Upholstering.
 - c. Grade on report on regions and countries involved in competition.

Standards

Academic Standards

- A8 Analyze data and apply concepts of probability.
- B7 Investigate the interdependence and interactions that occur within an ecosystem.
- E1 Produce writing which reflects increasing proficiency through planning, writing, revising, and editing and which is specific to audience and purpose.
- E2 Communicate ideas for a variety of school and other life situations through listening, speaking, and reading aloud.
- E3 Read, evaluate, and use print, non-print, and technological sources to research issues and problems, to present information, and to complete projects.
- E4 Work individually and as a member of a team to analyze and interpret information, to make decisions, to solve problems, and to reflect, using increasingly complex and abstract thinking.
- E5 Complete oral and written presentations which exhibit interaction and consensus within a group.
- E9 Sustain progress toward fluent control of grammar, mechanics, and usage of standard English in the context of writing and speaking.
- E10 Use language and critical thinking strategies to serve as tools for learning.
- H1 Explain how geography, economics, and politics have influenced the historical development of the United States in the global community.
- H2 Describe the impact of science and technology on the historical development of the United States in the global community.
- H3 Describe the relationship of people, places, and environments through time.
- H4 Demonstrate the ability to use social studies tools (e.g., timelines, maps, globes, resources, graphs, a compass, technology, etc.).
- H5 Analyze the contributions of Americans to the ongoing democratic process to include civic responsibilities.

Workplace Skills

- WP2 Acquires, evaluates, organizes and maintains, and interprets/communicates information, including the use of computers.
- WP3 Practices interpersonal skills related to careers including team member participation, teaching other people, serving clients/customers, exercising leadership, negotiation, and working with culturally diverse.
- WP6 Employs thinking skills including creative thinking, decision making, problem solving, reasoning, and knowing how to learn.
- WP7 Basic Skills: Employs basic academic skills including reading, writing, arithmetic and mathematics, speaking, and listening.
- WP8 Personal Qualities: Practices work ethics related to individual responsibility, integrity, honesty, and personal management.

National Educational Technology Standards for Students

- T1 Basic operations and concepts
- T2 Social, ethical, and human issues
- T3 Technology productivity tools
- T4 Technology communications tools
- T5 Technology research tools
- T6 Technology problem-solving and decision-making tools

Suggested References

Choices [Computer software]. (2004). Oroville, WA: Bridges.com Co.

Developing safety skills for shop or home. (2002). Winterville, GA: American Association for Vocational Instructional Materials & Tuscaloosa, AL: Resource Center for Technology.

Feirer, J. L. (2002). *Wood technology and processes.* New York: Glencoe/McGraw-Hill.

Grimes, L. A., Jr. (1985). *Furniture repairer and upholsterer: Student's manual.* Austin, TX: Extension and Materials Center, Division of Continuing Education, University of Texas at Austin.

High School Career Centers.

Kicklighter, C. E., & Kicklighter, J. C. (2001). *Upholstery fundamentals.* Tinley Park, IL: Goodheart-Willcox.

Kicklighter, C. E., & Wagner, W. H. (2004). *Modern woodworking.* Tinley Park, IL: Goodheart-Willcox.

Local School District Handbook.

Mississippi manufacturing wage, salary & fringe benefit survey. (2001). Compiled by: North Mississippi Industrial Development Association. Under contract to: Mississippi Development Authority.

Singer Sewing Reference Library. (1997). *Upholstery basics.* Creative Publishing International.

SkillsUSA-VICA. (2001). *Student Handbook.* Washington, DC: Vocational Industrial Clubs of America (VICA).

Zimmerman, F. W. (1992). *Upholstering methods.* Tinley Park, IL: Goodheart-Willcox.

Zimmerman, F. W., & McWard, L. J. (1999). *Exploring woodworking*. Tinley Park, IL: Goodheart-Willcox.

Additional Resources:

Community resource professionals.

What do employers expect from me? (Poster). Available from Tech Prep Office, Mississippi Department of Education.

Videos:

Discover a furniture career. (1996). High Point, NC: American Furniture Manufacturers Association.

ShopWare series. (1990). Vocational Educational Software and Videos. Aberdeen, WA: Shopware.

The Brookwood showroom. (1990). Pontotoc, MS: Brookwood Industries.

FURNITURE MANUFACTURING & UPHOLSTERING II

FURNITURE MANUFACTURING & UPHOLSTERING II
UNIT 1: REVIEW OF GENERAL SAFETY

(5 hours)

Competencies and Suggested Objectives:

1. Review the safety requirements for upholstered manufacturing.
 - a. Describe personal safety rules for working in a shop/lab and industry, including OSHA regulations.
 - b. Describe the general workplace safety rules.
 - c. Describe the proper use of fire extinguishers and classes of fires.
 - d. Identify standard industry Safety Color-Coding System.
 - e. Describe procedures for safety handling heavy objects.
 - f. Describe accident reporting procedures.
2. Review hazardous materials that may be found on a job site and describe procedures for handling/avoidance or removal of materials.
 - a. Interpret a Material Safety Data Sheet (MSDS).
 - b. Describe the approved storage procedures for flammable materials found in the upholstered furniture shop.
 - c. Describe approved procedures for disposal of hazardous materials.

Suggested Teaching Strategies:

1. Review the safety requirements for upholstered manufacturing.
 - a. Discuss personal safety rules for working in a shop/lab and industry, including OSHA regulations.
 - b. Discuss general workplace safety rules.
 - c. Demonstrate procedures for the proper use of fire extinguishers and classes of fires.
 - d. Oral presentation using visual aids (poster, PowerPoint presentation); explain standard industry Safety Color-Coding System.
 - e. Demonstrate procedures for safely handling heavy objects.
 - f. Oral/written assignment to illustrate accident reporting procedures.
2. Review hazardous materials that may be found on a job site and describe procedures for handling/avoidance or removal of materials.
 - a. Using a specific chemical product that is typically found in a furniture upholstery shop, discuss and explain how to use an MSDS.
 - b. Discuss the approved storage procedures for flammable materials found in the upholstered furniture shop.
 - c. Discuss approved procedures for disposal of hazardous materials.

Suggested Assessment Strategies:

1. Review the safety requirements for upholstered manufacturing.
 - a. Test.
 - b. Test.
 - c. Checklist, using a rubric.
 - d. Test.
 - e. Test.
 - f. Grade on assignment.
2. Review hazardous materials that may be found on a job site and describe procedures for handling/avoidance or removal of materials.
 - a. Grade on student activity sheet.
 - b. Teacher observation and student class participation.
 - c. Teacher observation and student class participation.

Standards

Academic Standards

- B1 Utilize critical thinking and scientific problem solving in designing and performing biological research and experimentation.
- B4 Investigate the transfer of energy from the sun to living systems.
- B7 Investigate the interdependence and interactions that occur within an ecosystem.
- E1 Produce writing which reflects increasing proficiency through planning, writing, revising, and editing and which is specific to audience and purpose.
- E2 Communicate ideas for a variety of school and other life situations through listening, speaking, and reading aloud.
- E3 Read, evaluate, and use print, non-print, and technological sources to research issues and problems, to present information, and to complete projects.
- E4 Work individually and as a member of a team to analyze and interpret information, to make decisions, to solve problems, and to reflect, using increasingly complex and abstract thinking.
- E5 Complete oral and written presentations which exhibit interaction and consensus within a group.
- E9 Sustain progress toward fluent control of grammar, mechanics, and usage of standard English in the context of writing and speaking.
- E10 Use language and critical thinking strategies to serve as tools for learning.
- H1 Explain how geography, economics, and politics have influenced the historical development of the United States in the global community.
- H5 Analyze the contributions of Americans to the ongoing democratic process to include civic responsibilities.

Workplace Skills

- WP2 Acquires, evaluates, organizes and maintains, and interprets/communicates information, including the use of computers.
- WP3 Practices interpersonal skills related to careers including team member participation, teaching other people, serving clients/customers, exercising leadership, negotiation, and working with culturally diverse.
- WP6 Employs thinking skills including creative thinking, decision making, problem solving, reasoning, and knowing how to learn.
- WP7 Basic Skills: Employs basic academic skills including reading, writing, arithmetic and mathematics, speaking, and listening.
- WP8 Personal Qualities: Practices work ethics related to individual responsibility, integrity, honesty, and personal management.

National Educational Technology Standards for Students

- T2 Social, ethical, and human issues
- T3 Technology productivity tools
- T4 Technology communications tools
- T5 Technology research tools
- T6 Technology problem-solving and decision-making tools

Suggested References

- Developing safety skills for shop or home.* (2002). Winterville, GA: American Association for Vocational Instructional Materials & Tuscaloosa, AL: Resource Center for Technology.
- Grimes, L. A., Jr. (1985). *Furniture repairer and upholsterer: Student's manual.* Austin, TX: Extension and Materials Center, Division of Continuing Education, University of Texas at Austin.
- Kicklighter, C. E., & Wagner, W. H. (2004). *Modern woodworking.* Tinley Park, IL: Goodheart-Willcox.

Local School District Handbook.

Additional Resources:

Community resource professionals.

What do employers expect from me? (Poster). Available from Tech Prep Office, Mississippi Department of Education.

Videos:

ShopWare series. (1990). Vocational Educational Software and Videos.
Aberdeen, WA: Shopware.

FURNITURE MANUFACTURING & UPHOLSTERING II
UNIT 2: FURNITURE UPHOLSTERY TOOLS

(10 hours)

Competencies and Suggested Objectives:

1. Identify furniture upholstery tools and fasteners.
 - a. Identify types of hammers used in upholstery work.
 - b. Identify types of upholstery needles.
 - c. Identify types of stuffing devices.
 - d. Identify staple fasteners.
 - e. Identify cutting devices.
2. Demonstrate the safe use of furniture upholstery tools.
 - a. Demonstrate the safe use of upholstery hammers.
 - b. Demonstrate the safe use of upholstery needles.
 - c. Demonstrate the safe use of upholstery stuffing devices.
 - d. Demonstrate the safe use of upholstery staple fasteners.
 - e. Demonstrate the safe use of upholstery cutting devices.

Suggested Teaching Strategies:

1. Identify furniture upholstery tools and fasteners.
 - a. Practical exercise to identify types of hammers used in upholstery work.
 - b. Practical exercise to identify types of upholstery needles.
 - c. Practical exercise to identify types of stuffing devices.
 - d. Practical exercise to identify staple fasteners.
 - e. Practical exercise to identify cutting devices.
2. Demonstrate the safe use of furniture upholstery tools.
 - a. Practical exercise to demonstrate the safe use of upholstery hammers.
 - b. Practical exercise to demonstrate the safe use of upholstery needles.
 - c. Practical exercise to demonstrate the safe use of upholstery stuffing devices.
 - d. Practical exercise to demonstrate the safe use of upholstery staple fasteners.
 - e. Practical exercise to demonstrate the safe use of upholstery cutting devices.

Suggested Assessment Strategies:

1. Identify furniture upholstery tools and fasteners.
 - a. Checklist - Identify types of hammers used in upholstery work.
 - b. Checklist - Identify types of upholstery needles.
 - c. Checklist - Identify types of stuffing devices.
 - d. Checklist - Identify staple fasteners.
 - e. Checklist - Identify cutting devices.

2. Demonstrate the safe use of furniture upholstery tools.
 - a. Teacher observation - Student will demonstrate the safe use of upholstery hammers.
 - b. Teacher observation - Student will demonstrate the safe use of upholstery needles.
 - c. Teacher observation - Student will demonstrate the safe use of upholstery stuffing devices.
 - d. Teacher observation - Student will demonstrate the safe use of upholstery staple fasteners.
 - e. Teacher observation - Student will demonstrate the safe use of upholstery cutting devices.

Standards

Academic Standards

- A1 Recognize, classify, and use real numbers and their properties.
- B1 Utilize critical thinking and scientific problem solving in designing and performing biological research and experimentation.
- E2 Communicate ideas for a variety of school and other life situations through listening, speaking, and reading aloud.
- E4 Work individually and as a member of a team to analyze and interpret information, to make decisions, to solve problems, and to reflect, using increasingly complex and abstract thinking.
- E10 Use language and critical thinking strategies to serve as tools for learning.
- H2 Describe the impact of science and technology on the historical development of the United States in the global community

Workplace Skills

- WP1 Allocates resources (time, money, materials and facilities, and human resources).
- WP2 Acquires, evaluates, organizes and maintains, and interprets/communicates information, including the use of computers.
- WP3 Practices interpersonal skills related to careers including team member participation, teaching other people, serving clients/customers, exercising leadership, negotiation, and working with culturally diverse.
- WP6 Employs thinking skills including creative thinking, decision making, problem solving, reasoning, and knowing how to learn.

National Educational Technology Standards for Students

- T1 Basic operations and concepts
- T2 Social, ethical, and human issues
- T4 Technology communications tools
- T5 Technology research tools

T6 Technology problem-solving and decision-making tools

Suggested References

Developing safety skills for shop or home. (2002). Winterville, GA: American Association for Vocational Instructional Materials & Tuscaloosa, AL: Resource Center for Technology.

Grimes, L. A., Jr. (1985). *Furniture repairer and upholsterer: Student's manual.* Austin, TX: Extension and Materials Center, Division of Continuing Education, University of Texas at Austin.

Kicklighter, C. E., & Kicklighter, J. C. (2001). *Upholstery fundamentals.* Tinley Park, IL: Goodheart-Willcox.

Kicklighter, C. E., & Wagner, W. H. (2004). *Modern woodworking.* Tinley Park, IL: Goodheart-Willcox.

Local School District Handbook.

Singer Sewing Reference Library. (1997). *Upholstery basics.* Creative Publishing International.

Zimmerman, F. W. (1992). *Upholstering methods.* Tinley Park, IL: Goodheart-Willcox.

Additional Resources:

Community resource professionals.

What do employers expect from me? (Poster). Available from Tech Prep Office, Mississippi Department of Education.

Videos:

ShopWare series. (1990). Vocational Educational Software and Videos. Aberdeen, WA: Shopware.

FURNITURE MANUFACTURING & UPHOLSTERING II
UNIT 3: FURNITURE PADDING, HARDWARE, AND SUPPORT
SYSTEM COMPONENTS

(30 hours)

Competencies and Suggested Objectives:

1. Identify padding and hardware components used in upholstered furniture manufacturing.
 - a. Describe types of furniture padding and hardware components used in upholstery work.
 - b. Describe factors upon which seating comfort depends, including foam density and spring gauge.
 - c. Compare the properties of padding materials used in upholstered furniture.
2. Apply support system components.
 - a. Determine the type of springs or support system to be used.
 - b. Install support system components.
3. Apply upholstered furniture padding.
 - a. Determine the type of padding to be used.
 - b. Transfer the measurements from pattern to padding, according to specifications.
 - c. Cut padding, according to specifications.
 - d. Apply padding to frame and fasten according to specifications.

Suggested Teaching Strategies:

1. Identify padding and hardware components used in upholstered furniture manufacturing.
 - a. Discuss types of furniture padding and hardware components used in upholstery work.
 - b. Discuss factors upon which seating comfort depends, including foam density and spring gauge.
 - c. Using actual classroom samples discuss and examine types of padding materials used in upholstered furniture.
2. Apply support system components.
 - a. Discuss and demonstrate the types of springs or support system to be used in construction of upholstered furniture.
 - b. Class demonstration showing how to install support system components.
3. Apply upholstered furniture padding.
 - a. Discuss and demonstrate ways to determine the type of padding to be used.
 - b. Practical exercise to transfer the measurements from pattern to padding, according to specifications.
 - c. Practical exercise - Cut padding, according to specifications.

- d. Practical exercise - Apply padding to frame and fasten according to specifications.

Suggested Assessment Strategies:

1. Identify padding and hardware components used in upholstered furniture manufacturing.
 - a. Grade on teacher-prepared handout.
 - b. Teacher observation and student participation.
 - c. Teacher observation and student participation
2. Apply support system components.
 - a. Teacher observation and student participation.
 - b. Checklist, using rubric.
3. Apply upholstered furniture padding.
 - a. Teacher observation and student participation.
 - b. Checklist, using rubric.
 - c. Teacher observation and student participation.
 - d. Teacher observation and student participation.

Standards

Academic Standards

- A1 Recognize, classify, and use real numbers and their properties.
- A5 Utilize various formulas in problem-solving situations.
- E1 Produce writing which reflects increasing proficiency through planning, writing, revising, and editing and which is specific to audience and purpose.
- E2 Communicate ideas for a variety of school and other life situations through listening, speaking, and reading aloud.
- E5 Complete oral and written presentations which exhibit interaction and consensus within a group.
- E9 Sustain progress toward fluent control of grammar, mechanics, and usage of standard English in the context of writing and speaking.
- E10 Use language and critical thinking strategies to serve as tools for learning.
- H2 Describe the impact of science and technology on the historical development of the United States in the global community.
- H5 Analyze the contributions of Americans to the ongoing democratic process to include civic responsibilities.

Workplace Skills

- WP1 Allocates resources (time, money, materials and facilities, and human resources).
- WP2 Acquires, evaluates, organizes and maintains, and interprets/communicates information, including the use of computers.

- WP3 Practices interpersonal skills related to careers including team member participation, teaching other people, serving clients/customers, exercising leadership, negotiation, and working with culturally diverse.
- WP6 Employs thinking skills including creative thinking, decision making, and problem solving, reasoning, and knowing how to learn.
- WP7 Basic Skills: Employs basic academic skills including reading, writing, arithmetic and mathematics, speaking, and listening.
- WP8 Personal Qualities: Practices work ethics related to individual responsibility, integrity, honesty, and personal management.

National Educational Technology Standards for Students

- T4 Technology communications tools
- T5 Technology research tools
- T6 Technology problem-solving and decision-making tools

Suggested References

Grimes, L. A., Jr. (1985). *Furniture repairer and upholsterer: Student's manual*. Austin, TX: Extension and Materials Center, Division of Continuing Education, University of Texas at Austin.

Kicklighter, C. E., & Kicklighter, J. C. (2001). *Upholstery fundamentals*. Tinley Park, IL: Goodheart-Willcox.

Singer Sewing Reference Library. (1997). *Upholstery basics*. Creative Publishing International.

Zimmerman, F. W. (1992). *Upholstering methods*. Tinley Park, IL: Goodheart-Willcox.

Videos:

ShopWare series. (1990). Vocational Educational Software and Videos. Aberdeen, WA: Shopware.

Upholstery advanced furniture techniques # 2. (1995). El Verano, CA: Vista Upholstery Enterprises. www.upholster.com

Upholstery fundamentals. (1995). El Verano, CA: Vista Upholstery Enterprises. www.upholster.com

FURNITURE MANUFACTURING & UPHOLSTERING II
UNIT 4: MEASURE, LAY OUT, AND CUT FABRICS

(30 hours)

Competencies and Suggested Objectives:

1. Identify parts of furniture being manufactured.
 - a. Identify parts of upholstered furniture, including front seat, bottom band, inside arm, inside back, back band, out side arm, outside back, and skirt.
 - b. Measure parts of furniture.
2. Identify fabric cutting procedures.
 - a. Develop a pattern for part layout using computer technology.
 - b. Lay out fabric.
 - c. Cut the fabric following the required steps.
 - d. Demonstrate automated cutting equipment.

Suggested Teaching Strategies:

1. Identify parts of the furniture being manufactured.
 - a. Practical exercise to identify parts of upholstered furniture, including front seat, bottom band, inside arm, top arm, inside back, back band, outside arm, outside back, and skirt.
 - b. Practical exercise to measure parts of furniture.
2. Identify fabric cutting procedures.
 - a. Practical exercise to develop a pattern for part layout using computer technology.
 - b. Practical exercise to lay out fabric.
 - c. Practical exercise to cut fabric following the required steps.
 - d. Field trip to demonstrate automated cutting equipment.

Suggested Assessment Strategies:

1. Identify parts of the furniture being manufactured.
 - a. Checklist, using rubric.
 - b. Checklist, using rubric.
2. Identify fabric cutting procedures.
 - a. Teacher observation and student participation.
 - b. Teacher observation and student participation.
 - c. Checklist, using rubric.
 - d. Student observation.

Standards

Academic Standards

- A1 Recognize, classify, and use real numbers and their properties.

- A2 Recognize, create, extend, and apply patterns, relations, and functions and their applications.
- A3 Simplify algebraic expressions, solve and graph equations, inequalities and systems in one and two variables.
- A4 Explore and communicate the characteristics and operations of polynomials.
- A5 Utilize various formulas in problem-solving situations.
- A6 Communicate using the language of algebra.
- A8 Analyze data and apply concepts of probability.
- B1 Utilize critical thinking and scientific problem solving in designing and performing biological research and experimentation.
- E1 Produce writing which reflects increasing proficiency through planning, writing, revising, and editing and which is specific to audience and purpose.
- E2 Communicate ideas for a variety of school and other life situations through listening, speaking, and reading aloud.
- E3 Read, evaluate, and use print, non-print, and technological sources to research issues and problems, to present information, and to complete projects.
- E4 Work individually and as a member of a team to analyze and interpret information, to make decisions, to solve problems, and to reflect, using increasingly complex and abstract thinking.
- E9 Sustain progress toward fluent control of grammar, mechanics, and usage of standard English in the context of writing and speaking.
- E10 Use language and critical thinking strategies to serve as tools for learning.
- H2 Describe the impact of science and technology on the historical development of the United States in the global community.

Workplace Skills

- WP1 Allocates resources (time, money, materials and facilities, and human resources).
- WP2 Acquires, evaluates, organizes and maintains, and interprets/communicates information, including the use of computers.
- WP3 Practices interpersonal skills related to careers including team member participation, teaching other people, serving clients/customers, exercising leadership, negotiation, and working with culturally diverse.
- WP6 Employs thinking skills including creative thinking, decision making, problem solving, reasoning, and knowing how to learn.
- WP7 Basic Skills: Employs basic academic skills including reading, writing, arithmetic and mathematics, speaking, and listening.
- WP8 Personal Qualities: Practices work ethics related to individual responsibility, integrity, honesty, and personal management.

National Educational Technology Standards for Students

- T2 Social, ethical, and human issues
- T4 Technology communications tools
- T5 Technology research tools

T6 Technology problem-solving and decision-making tools

Suggested References

Grimes, L. A., Jr. (1985). *Furniture repairer and upholsterer: Student's manual*. Austin, TX: Extension and Materials Center, Division of Continuing Education, University of Texas at Austin.

Kicklighter, C. E., & Kicklighter, J. C. (2001). *Upholstery fundamentals*. Tinley Park, IL: Goodheart-Willcox.

Singer Sewing Reference Library. (1997). *Upholstery basics*. Creative Publishing International.

Zimmerman, F. W. (1992). *Upholstering methods*. Tinley Park, IL: Goodheart-Willcox.

Videos:

ShopWare series. (1990). Vocational Educational Software and Videos. Aberdeen, WA: Shopware.

Upholstery advanced furniture techniques # 2. (1995). El Verano, CA: Vista Upholstery Enterprises. www.upholster.com

Upholstery fundamentals. (1995). El Verano, CA: Vista Upholstery Enterprises. www.upholster.com

FURNITURE MANUFACTURING & UPHOLSTERING II
UNIT 5: SEWING PROCEDURES

(45 hours)

Competencies and Suggested Objectives:

1. Identify types and basic parts of sewing machines.
 - a. Identify types of sewing machines.
 - b. Identify basic parts of a sewing machine.
 - c. Describe the functions of each part of a sewing machine.
2. Operate a sewing machine.
 - a. Thread a sewing machine.
 - b. Perform a sewing procedure, including sewing pull, welting, boxing, zippers, dart, pleat, and corners.
 - c. Demonstrate the maintenance procedures for a sewing machine, according to manufacturer's specifications.

Suggested Teaching Strategies:

1. Identify types and basic parts of sewing machines.
 - a. Discuss types of sewing machines.
 - b. Practical exercise to identify basic parts of a sewing machine.
 - c. Discuss and demonstrate the functions of each part of a sewing machine.
2. Operate a sewing machine.
 - a. Practical exercise to thread a sewing machine.
 - b. Practical exercise to perform a sewing procedure, including sewing pull, welting, boxing, zippers, dart, pleat, and corners.
 - c. Practical exercise to demonstrate the maintenance procedures for a sewing machine, according to manufacturer's specifications.

Suggested Assessment Strategies:

1. Identify types and basic parts of sewing machines.
 - a. Teacher observation and student participation.
 - b. Checklist on identification of basic parts of a sewing machine.
 - c. Teacher observation and student participation.
2. Operate a sewing machine.
 - a. Checklist, using rubric.
 - b. Checklist, using rubric.
 - c. Student observation.

Standards

Academic Standards

- A1 Recognize, classify, and use real numbers and their properties.
- B1 Utilize critical thinking and scientific problem solving in designing and performing biological research and experimentation.
- E2 Communicate ideas for a variety of school and other life situations through listening, speaking, and reading aloud.
- E3 Read, evaluate, and use print, non-print, and technological sources to research issues and problems, to present information, and to complete projects.
- E4 Work individually and as a member of a team to analyze and interpret information, to make decisions, to solve problems, and to reflect, using increasingly complex and abstract thinking.
- E9 Sustain progress toward fluent control of grammar, mechanics, and usage of standard English in the context of writing and speaking.
- E10 Use language and critical thinking strategies to serve as tools for learning.
- H1 Explain how geography, economics, and politics have influenced the historical development of the United States in the global community.
- H2 Describe the impact of science and technology on the historical development of the United States in the global community.

Workplace Skills

- WP1 Allocates resources (time, money, materials and facilities, and human resources).
- WP2 Acquires, evaluates, organizes and maintains, and interprets/communicates information, including the use of computers.
- WP3 Practices interpersonal skills related to careers including team member participation, teaching other people, serving clients/customers, exercising leadership, negotiation, and working with culturally diverse.
- WP6 Employs thinking skills including creative thinking, decision making, problem solving, reasoning, and knowing how to learn.

National Educational Technology Standards for Students

- T2 Social, ethical, and human issues

Suggested References

Grimes, L. A., Jr. (1985). *Furniture repairer and upholsterer: Student's manual*. Austin, TX: Extension and Materials Center, Division of Continuing Education, University of Texas at Austin.

Singer Sewing Reference Library. (1997). *Upholstery basics*. Creative Publishing International.

SkillsUSA-VICA. (2001). *Student Handbook*. Washington, DC: Vocational Industrial Clubs of America (VICA).

Zimmerman, F. W. (1992). *Upholstering methods*. Tinley Park, IL: Goodheart-Willcox.

Videos:

ShopWare series. (1990). Vocational Educational Software and Videos. Aberdeen, WA: Shopware.

Upholstery advanced furniture techniques # 2. (1995). El Verano, CA: Vista Upholstery Enterprises. www.upholster.com

Upholstery fundamentals. (1995). El Verano, CA: Vista Upholstery Enterprises. www.upholster.com

FURNITURE MANUFACTURING & UPHOLSTERING II
UNIT 6: FURNITURE UPHOLSTERY

(80 hours)

Competencies and Suggested Objectives:

1. Identify the steps in furniture upholstery.
 - a. Identify the steps in seat construction.
 - b. Identify the steps in arm construction.
 - c. Identify the steps in back construction.
 - d. Identify the steps in outside trim construction.
2. Perform the steps in furniture upholstery.
 - a. Perform the steps in seat construction.
 - b. Perform the steps in arm construction.
 - c. Perform the steps in back construction.
 - d. Perform the steps in outside trim construction.

Suggested Teaching Strategies:

1. Identify the steps in furniture upholstery.
 - a. Practical exercise to identify the steps in seat construction.
 - b. Practical exercise to identify the steps in arm construction.
 - c. Practical exercise to identify the steps in back construction.
 - d. Practical exercise to identify the steps in outside trim construction.
2. Perform the steps in furniture upholstery.
 - a. Practical exercise to perform the steps in seat construction.
 - b. Practical exercise to perform the steps in arm construction.
 - c. Practical exercise to perform the steps in back construction.
 - d. Practical exercise to perform the steps in outside trim construction.

Suggested Assessment Strategies:

1. Identify the steps in furniture upholstery.
 - a. Teacher observation and student participation.
 - b. Teacher observation and student participation.
 - c. Teacher observation and student participation.
 - d. Teacher observation and student participation.
2. Perform the steps in furniture upholstery.
 - a. Checklist, using rubric.
 - b. Checklist, using rubric.
 - c. Checklist, using rubric.
 - d. Checklist, using rubric.

Standards

Academic Standards

- A1 Recognize, classify, and use real numbers and their properties.
- B1 Utilize critical thinking and scientific problem solving in designing and performing biological research and experimentation.
- E2 Communicate ideas for a variety of school and other life situations through listening, speaking, and reading aloud.
- E3 Read, evaluate, and use print, non-print, and technological sources to research issues and problems, to present information, and to complete projects.
- E4 Work individually and as a member of a team to analyze and interpret information, to make decisions, to solve problems, and to reflect, using increasingly complex and abstract thinking.
- E5 Complete oral and written presentations which exhibit interaction and consensus within a group.
- E9 Sustain progress toward fluent control of grammar, mechanics, and usage of standard English in the context of writing and speaking.
- E10 Use language and critical thinking strategies to serve as tools for learning.

Workplace Skills

- WP1 Allocates resources (time, money, materials and facilities, and human resources).
- WP2 Acquires, evaluates, organizes and maintains, and interprets/communicates information, including the use of computers.
- WP3 Practices interpersonal skills related to careers including team member participation, teaching other people, serving clients/customers, exercising leadership, negotiation, and working with culturally diverse.
- WP6 Employs thinking skills including creative thinking, decision making, problem solving, reasoning, and knowing how to learn.

National Educational Technology Standards for Students

- T1 Basic operations and concepts
- T2 Social, ethical, and human issues
- T3 Technology productivity tools
- T4 Technology communications tools
- T5 Technology research tools
- T6 Technology problem-solving and decision-making tools

Suggested References

Grimes, L. A., Jr. (1985). *Furniture repairer and upholsterer: Student's manual*. Austin, TX: Extension and Materials Center, Division of Continuing Education, University of Texas at Austin.

Kicklighter, C. E., & Kicklighter, J. C. (2001). *Upholstery fundamentals*. Tinley Park, IL: Goodheart-Willcox.

Singer Sewing Reference Library. (1997). *Upholstery basics*. Creative Publishing International.

Zimmerman, F. W. (1992). *Upholstering methods*. Tinley Park, IL: Goodheart-Willcox.

Videos:

ShopWare series. (1990). Vocational Educational Software and Videos. Aberdeen, WA: Shopware.

Upholstery advanced furniture techniques # 2. (1995). El Verano, CA: Vista Upholstery Enterprises. www.upholster.com

Upholstery fundamentals. (1995). El Verano, CA: Vista Upholstery Enterprises. www.upholster.com

FURNITURE MANUFACTURING & UPHOLSTERING II
UNIT 7: SPECIAL TOPICS IN FURNITURE
MANUFACTURING & UPHOLSTERING II (ongoing)

(22.5 hours)

(NOTE: Competencies and suggested objectives in this unit should be integrated into other instructional units throughout the year. This unit is designated as ongoing and is repeated in both years of the program; however, students should be expected to continually observe and report on current topics.)

Competencies and Suggested Objectives:

1. Investigate new and emerging technologies, practices, trends, and issues associated with Furniture Manufacturing & Upholstering.
 - a. Recognize new and emerging technologies associated with Furniture Manufacturing & Upholstering.
 - b. Recognize current trends or issues associated with Furniture Manufacturing & Upholstering.
2. Complete school-to-careers activities related to Furniture Manufacturing & Upholstering.
 - a. Participate in school-to-careers activity (shadowing, mentoring, career fair, etc.).
 - b. Investigate educational opportunities related to Furniture Manufacturing & Upholstering at the postsecondary level.
 - c. Describe national standards and certification/licensing procedures related to Furniture Manufacturing & Upholstering.
 - d. Describe the role of trade organizations, associations, and unions as related to Furniture Manufacturing & Upholstering.
3. Demonstrate related academic skills and workplace skills associated with Furniture Manufacturing & Upholstering.
 - a. Complete a cooperative project (paper, presentation, or demonstration) associated with an academic subject and Furniture Manufacturing & Upholstering.
 - b. Practice human relations skills (team participation, client/customer service, leadership, negotiation, working with culturally diverse populations, etc.) related to Furniture Manufacturing & Upholstering.
 - c. Research work ethics and employer expectations of employees in Furniture Manufacturing & Upholstering.
4. Investigate the concepts of quality assurance as related to Furniture Manufacturing & Upholstering.
 - a. Describe quality concepts and methods for measuring quality related to Furniture Manufacturing & Upholstering.
 - b. Apply quality concepts in the Furniture Manufacturing & Upholstering laboratory.
5. Examine trends and changes related to Furniture Manufacturing & Upholstering and global economic factors.
 - a. Define and discuss the concept of global economics and competition.

- b. Describe global economic factors and competition as related to Furniture Manufacturing & Upholstering.
- c. Identify regions and other countries which compete in Furniture Manufacturing & Upholstering.

Suggested Teaching Strategies:

1. Investigate new emerging technologies, practices, trends, and issues associated with Furniture Manufacturing & Upholstering.
 - a. Have students conduct research and prepare report on a new or emerging technology associated with Furniture Manufacturing & Upholstering.
 - b. Have students conduct research and prepare a report on a current trend or issue associated with Furniture Manufacturing & Upholstering.
2. Complete school-to-careers activities related to Furniture Manufacturing & Upholstering.
 - a. Have students participate in a school-to-careers activity such as a shadowing or mentoring experience, or a career fair.
 - b. Have students investigate postsecondary educational opportunities at the community/junior college, four-year college, and apprenticeship level.
 - c. Have students investigate any national standards that apply to Furniture Manufacturing & Upholstering and report on national or regional certification or licensure programs or agencies.
 - d. Identify trade associations, professional organizations, and union associated with Furniture Manufacturing & Upholstering and describe how their role affects employees.
3. Demonstrate related academic skills and workplace skills associated with Furniture Manufacturing & Upholstering.
 - a. Have students complete a cooperative project such as a paper presentation, or demonstration associated with a related academic subject.
 - b. Have students practice human relations skills such as team participation, client/customer service, negotiation, etc. related to Furniture Manufacturing & Upholstering.
 - c. Have students research acceptable work ethics and determine employer expectations for persons employed in Furniture Manufacturing & Upholstering by interviewing employers, supervisors, and employees and reporting back to the class.
4. Investigate the concepts of quality assurance as related to Furniture Manufacturing & Upholstering.
 - a. Lead a discussion of the concepts of quality assurance and the methods that can be used to measure quality and gauge quality improvement as related to Furniture Manufacturing & Upholstering.
 - b. Have students apply quality concepts in the Furniture Manufacturing & Upholstering by measuring the quality of their work and charting the increase in quality over time.

5. Examine trends and changes related to Furniture Manufacturing & Upholstering and global economic factors.
 - a. Lead a discussion of the different concepts of global economics and competition as related to furniture Manufacturing & Upholstering.
 - b. Lead a discussion, using current newspaper and magazine articles, on specific issues related to Furniture Manufacturing & Upholstering and global economics and competition. Identify other countries which compete with products made in the United States.
 - c. Have students determine other regions and countries that affect competition in Furniture Manufacturing & Upholstering and describe ways in which this competition affects workers.

Suggested Assessment Strategies:

1. Investigate new and emerging technologies, practices, trends, and issues associated with Furniture Manufacturing & Upholstering.
 - a. Grade on student report on new and emerging technology.
 - b. Grade on student report on current trend or issue.
2. Complete school-to-careers activities related to Furniture Manufacturing & Upholstering.
 - a. Grade on the student participation in the school-to-careers activity.
 - b. Grade on student investigation of postsecondary educational opportunities.
 - c. Report on national certification/licensure agencies.
 - d. Report on trade organizations, professional organizations, and unions and their roles.
3. Demonstrate related academic skills and workplace skills associated with Furniture Manufacturing & Upholstering.
 - a. Grade on cooperative project.
 - b. Grade on practice of human relations skills.
 - c. Grade on report on work ethics and employer expectations.
4. Investigate the concepts of quality assurance as related to Furniture Manufacturing & Upholstering.
 - a. Test on quality concepts and methods for measuring quality.
 - b. Grade on student assignment to chart quality increase over time in school laboratory or work experience.
5. Examine trends and changes related to Furniture Manufacturing & Upholstering and global economic factors.
 - a. Grade on report on concepts of global economics and competition.
 - b. Grade on report on global economics and competition as related to Furniture Manufacturing & Upholstering.
 - c. Grade on report on regions and countries involved in competition.

Standards

Academic Standards

- A8 Analyze data and apply concepts of probability.
- B7 Investigate the interdependence and interactions that occur within an ecosystem.
- E1 Produce writing which reflects increasing proficiency through planning, writing, revising, and editing and which is specific to audience and purpose.
- E2 Communicate ideas for a variety of school and other life situations through listening, speaking, and reading aloud.
- E3 Read, evaluate, and use print, non-print, and technological sources to research issues and problems, to present information, and to complete projects.
- E4 Work individually and as a member of a team to analyze and interpret information, to make decisions, to solve problems, and to reflect, using increasingly complex and abstract thinking.
- E5 Complete oral and written presentations which exhibit interaction and consensus within a group.
- E9 Sustain progress toward fluent control of grammar, mechanics, and usage of standard English in the context of writing and speaking.
- E10 Use language and critical thinking strategies to serve as tools for learning.
- H1 Explain how geography, economics, and politics have influenced the historical development of the United States in the global community.
- H2 Describe the impact of science and technology on the historical development of the United States in the global community.
- H3 Describe the relationship of people, places, and environments through time.
- H4 Demonstrate the ability to use social studies tools (e.g., timelines, maps, globes, resources, graphs, a compass, technology, etc.).
- H5 Analyze the contributions of Americans to the ongoing democratic process to include civic responsibilities.

Workplace Skills

- WP2 Acquires, evaluates, organizes and maintains, and interprets/communicates information, including the use of computers.
- WP3 Practices interpersonal skills related to careers including team member participation, teaching other people, serving clients/customers, exercising leadership, negotiation, and working with culturally diverse.
- WP6 Employs thinking skills including creative thinking, decision making, problem solving, reasoning, and knowing how to learn.
- WP7 Basic Skills: Employs basic academic skills including reading, writing, arithmetic and mathematics, speaking, and listening.
- WP8 Personal Qualities: Practices work ethics related to individual responsibility, integrity, honesty, and personal management.

National Educational Technology Standards for Students

- T1 Basic operations and concepts
- T2 Social, ethical, and human issues
- T3 Technology productivity tools
- T4 Technology communications tools
- T5 Technology research tools
- T6 Technology problem-solving and decision-making tools

Suggested References

Choices [Computer software]. (2004). Oroville, WA: Bridges.com Co.

Developing safety skills for shop or home. (2002). Winterville, GA: American Association for Vocational Instructional Materials & Tuscaloosa, AL: Resource Center for Technology.

Feirer, J. L. (2002). *Wood technology and processes.* New York: Glencoe/McGraw-Hill.

Grimes, L. A., Jr. (1985). *Furniture repairer and upholsterer: Student's manual.* Austin, TX: Extension and Materials Center, Division of Continuing Education, University of Texas at Austin.

High School Career Centers.

Kicklighter, C. E., & Kicklighter, J. C. (2001). *Upholstery fundamentals.* Tinley Park, IL: Goodheart-Willcox.

Kicklighter, C. E., & Wagner, W. H. (2004). *Modern woodworking.* Tinley Park, IL: Goodheart-Willcox.

Local School District Handbook.

Mississippi manufacturing wage, salary & fringe benefit survey. (2001). Compiled by: North Mississippi Industrial Development Association. Under contract to: Mississippi Development Authority.

Singer Sewing Reference Library. (1997). *Upholstery basics.* Creative Publishing International.

SkillsUSA-VICA. (2001). *Student Handbook.* Washington, DC: Vocational Industrial Clubs of America (VICA).

Zimmerman, F. W. (1992). *Upholstering methods.* Tinley Park, IL: Goodheart-Willcox.

Zimmerman, F. W., & McWard, L. J. (1999). *Exploring woodworking*. Tinley Park, IL: Goodheart-Willcox.

Additional Resources:

Community resource professionals.

What do employers expect from me? (Poster). Available from Tech Prep Office, Mississippi Department of Education.

Videos:

Discover a furniture career. (1996). High Point, NC: American Furniture Manufacturers Association.

ShopWare series. (1990). Vocational Educational Software and Videos. Aberdeen, WA: Shopware.

The Brookwood showroom. (1990). Pontotoc, MS: Brookwood Industries.

SECTION II:
CURRICULUM FRAMEWORKS
FOR
FURNITURE MANUFACTURING & UPHOLSTERING

CURRICULUM FRAMEWORK

Course Name: Furniture Manufacturing & Upholstering I

Course CIP Code: 48.0790

Course Description: Furniture Manufacturing & Upholstering I is the entry level course of the secondary Furniture Manufacturing & Upholstering program. Students in this course will gain foundation competencies related to orientation, safety, leadership, tool and equipment identification and use, measurement, furniture frame patterns and layout, cutting and assembling frames, and special topics in furniture manufacturing and upholstery. (2-2½ Carnegie units, depending upon time spent in the course)

Competencies and Suggested Objectives

1. Explain the requirements and working conditions for employment in the upholstered furniture manufacturing industry.
 - a. Describe employment opportunities in the upholstered furniture industry.
 - b. Describe the education and experience requirements for employment in the upholstered furniture industry.
 - c. Describe earning and working conditions in the upholstered furniture industry.
 - d. Describe employability skills necessary for employment in the furniture manufacturing industry.
2. Explain the local school rules and regulations.
 - a. Describe local school rules found in the student handbook.
 - b. Describe the shop and facilities requirements.
3. Describe SkillsUSA activities pertaining to furniture manufacturing.
 - a. Describe the purposes of the SkillsUSA organization.
 - b. Describe the leadership development activities of SkillsUSA.
 - c. Describe the personal development activities associated with SkillsUSA.
 - d. Describe the skills competition events available through SkillsUSA.
4. Explain the safety requirements for upholstered manufacturing.
 - a. Describe personal safety rules for working in a shop/lab and industry, including OSHA regulations.
 - b. Describe the general workplace safety rules.
 - c. Describe the proper use of fire extinguishers and classes of fires.
 - d. Identify standard industry Safety Color-Coding System.
 - e. Describe procedures for safety handling heavy objects.
 - f. Describe accident reporting procedures.
5. Identify hazardous materials that may be found on a job site and describe procedures for handling/avoidance or removal of materials.
 - a. Interpret a Material Safety Data Sheet (MSDS).
 - b. Describe the approved storage procedures for flammable materials found in the upholstered furniture shop.

- c. Describe approved procedures for disposal of hazardous materials.
- 6. Demonstrate use of hand tools found in upholstered furniture manufacturing.
 - a. Identify hand tools used in frame building.
 - b. Demonstrate use of hand tools used in frame building.
- 7. Demonstrate use of power tools found in upholstered furniture frame manufacturing.
 - a. Identify types of air powered fasteners used in furniture manufacturing.
 - b. Demonstrate the use of air powered fasteners used in furniture manufacturing.
 - c. Identify power tools used in frame building.
 - d. Demonstrate use of power tools used in frame building.
 - e. Identify machines used in frame building.
 - f. Describe the functions of machines used in frame building.
 - g. Describe the safety rules of each machine used in frame building.
 - h. Demonstrate use of each machine used in frame building.
 - i. Perform maintenance procedures on each machine used in frame building.
- 8. Identify types of measuring devices used in furniture manufacturing.
 - a. Identify types of measuring devices used in furniture manufacturing, including tape measure, rules, squares, and compass.
 - b. Demonstrate ability to use types of measuring devices used in furniture manufacturing, including tape measure, rules, squares, and compass.
- 9. Perform mathematics essential to furniture manufacturing occupations.
 - a. Calculate fractions, including addition, subtraction, multiplication, and division.
 - b. Calculate board feet measurements in lumber.
- 10. Identify terms and materials commonly used in frame manufacture.
 - a. Define terms associated with frame patterns and layout.
 - b. Identify woods to use in different applications on frames.
- 11. Identify types and styles of upholstered furniture.
 - a. Describe types of furniture.
 - b. Describe the most common furniture styles.
- 12. Create a working drawing.
 - a. Read a working drawing, including dimensions and different features.
 - b. Develop a working drawing, including concept and dimensions using computer technology.
- 13. Apply a working drawing, including the layout and cutting of materials for a part from a working drawing.
 - a. Lay out patterns for the greatest yield.
 - b. Lay out patterns and duplicate parts.
 - c. Lay out patterns and duplicate parts using computer technology.
- 14. Prepare a bill of materials for the manufacture of a furniture frame.
 - a. Itemize the materials and supplies.
 - b. Determine quantities.
 - c. Determine costs.

15. Cut frames for upholstered furniture to specifications.
 - a. Cut parts to length using the radial arm saw.
 - b. Cut parts to width using the table saw.
 - c. Perform scroll cuts using the bandsaw.
 - d. Drill holes for dowel pins with the drill press.
 - e. Observe use of CNC equipment in cutting frames.
16. Assemble frame parts to specifications using fastening devices.
 - a. Assemble sofa and chair frames.
 - b. Assemble recliner frames.
17. Investigate new and emerging technologies, practices, trends, and issues associated with Furniture Manufacturing & Upholstering.
 - a. Recognize new and emerging technologies associated with Furniture Manufacturing & Upholstering.
 - b. Recognize current trends or issues associated with Furniture Manufacturing & Upholstering.
18. Complete school-to-careers activities related to Furniture Manufacturing & Upholstering.
 - a. Participate in school-to-careers activity (shadowing, mentoring, career fair, etc.)
 - b. Investigate educational opportunities related to Furniture Manufacturing & Upholstering at the postsecondary level.
 - c. Describe national standards and certification/licensing procedures related to Furniture Manufacturing & Upholstering.
 - d. Describe the role of trade organizations, associations, and unions as related to Furniture Manufacturing & Upholstering.
19. Demonstrate related academic skills and workplace skills associated with Furniture Manufacturing & Upholstering.
 - a. Complete a cooperative project (paper, presentation, or demonstration) associated with an academic subject and Furniture Manufacturing & Upholstering.
 - b. Practice human relations skills (team participation, client/customer service, leadership, negotiation, working with culturally diverse populations groups, etc.) related to Furniture Manufacturing & Upholstering.
 - c. Research work ethics and employer expectations of employees in Furniture Manufacturing & Upholstering.
20. Investigate the concepts of quality assurance as related to Furniture Manufacturing & Upholstering.
 - a. Describe quality concepts and methods for measuring quality related to Furniture Manufacturing & Upholstering.
 - b. Apply quality concepts in the Furniture Manufacturing & Upholstering laboratory.
21. Examine trends and changes related to Furniture Manufacturing & Upholstering and global economic factors.
 - a. Define and discuss the concept of global economics and competition.
 - b. Describe global economic factors and competition as related to Furniture Manufacturing & Upholstering.

- c. Identify regions and other countries which compete in Furniture Manufacturing & Upholstering.

CURRICULUM FRAMEWORK

Course Name: Furniture Manufacturing & Upholstering II

Course CIP Code: 48.0791

Course Description: Furniture Manufacturing & Upholstering II is the exit level course of the secondary Furniture Manufacturing & Upholstering program. Students in this course will gain additional skills related to upholstery tools; furniture padding, hardware and support system components; measurement, layout, and cutting of fabrics; sewing procedures, furniture upholstery; and special topics in furniture manufacturing and upholstery. (2-2½ Carnegie units, depending upon time spent in the course)

Competencies and Suggested Objectives:

1. Review the safety requirements for upholstered manufacturing.
 - a. Describe personal safety rules for working in a shop/lab and industry, including OSHA regulations.
 - b. Describe the general workplace safety rules.
 - c. Describe the proper use of fire extinguishers and classes of fires.
 - d. Identify standard industry Safety Color-Coding System.
 - e. Describe procedures for safety handling heavy objects.
 - f. Describe accident reporting procedures.
2. Review hazardous materials that may be found on a job site and describe procedures for handling/avoidance or removal of materials.
 - a. Interpret a Material Safety Data Sheet (MSDS).
 - b. Describe the approved storage procedures for flammable materials found in the upholstered furniture shop.
 - c. Describe approved procedures for disposal of hazardous materials.
3. Identify furniture upholstery tools and fasteners.
 - a. Identify types of hammers used in upholstery work.
 - b. Identify types of upholstery needles.
 - c. Identify types of stuffing devices.
 - d. Identify staple fasteners.
 - e. Identify cutting devices.
4. Demonstrate the safe use of furniture upholstery tools.
 - a. Demonstrate the safe use of upholstery hammers.
 - b. Demonstrate the safe use of upholstery needles.
 - c. Demonstrate the safe use of upholstery stuffing devices.
 - d. Demonstrate the safe use of upholstery staple fasteners.
 - e. Demonstrate the safe use of upholstery cutting devices.
5. Identify padding and hardware components used in upholstered furniture manufacturing.
 - a. Describe types of furniture padding and hardware components used in upholstery work.

- b. Describe factors upon which seating comfort depends, including foam density and spring gauge.
 - c. Compare the properties of padding materials used in upholstered furniture.
6. Apply support system components.
 - a. Determine the type of springs or support system to be used.
 - b. Install support system components.
 7. Apply upholstered furniture padding.
 - a. Determine the type of padding to be used.
 - b. Transfer the measurements from pattern to padding, according to specifications.
 - c. Cut padding, according to specifications.
 - d. Apply padding to frame and fasten according to specifications.
 8. Identify parts of furniture being manufactured.
 - a. Identify parts of upholstered furniture, including front seat, bottom band, inside arm, inside back, back band, out side arm, outside back, and skirt.
 - b. Measure parts of furniture.
 9. Identify fabric cutting procedures.
 - a. Develop a pattern for part layout using computer technology.
 - b. Lay out fabric.
 - c. Cut the fabric following the required steps.
 - d. Demonstrate automated cutting equipment.
 10. Identify types and basic parts of sewing machines.
 - a. Identify types of sewing machines.
 - b. Identify basic parts of a sewing machine.
 - c. Describe the functions of each part of a sewing machine.
 11. Operate a sewing machine.
 - a. Thread a sewing machine.
 - b. Perform a sewing procedure, including sewing pull, welting, boxing, zippers, dart, pleat, and corners.
 - c. Demonstrate the maintenance procedures for a sewing machine, according to manufacturer's specifications.
 12. Identify the steps in furniture upholstery.
 - a. Identify the steps in seat construction.
 - b. Identify the steps in arm construction.
 - c. Identify the steps in back construction.
 - d. Identify the steps in outside trim construction.
 13. Perform the steps in furniture upholstery.
 - a. Perform the steps in seat construction.
 - b. Perform the steps in arm construction.
 - c. Perform the steps in back construction.
 - d. Perform the steps in outside trim construction.
 14. Investigate new and emerging technologies, practices, trends, and issues associated with Furniture Manufacturing & Upholstering.
 - a. Recognize new and emerging technologies associated with Furniture Manufacturing & Upholstering.

- b. Recognize current trends or issues associated with Furniture Manufacturing & Upholstering.
15. Complete school-to-careers activities related to Furniture Manufacturing & Upholstering.
- a. Participate in school-to-careers activity (shadowing, mentoring, career fair, etc.).
 - b. Investigate educational opportunities related to Furniture Manufacturing & Upholstering at the postsecondary level.
 - c. Describe national standards and certification/licensing procedures related to Furniture Manufacturing & Upholstering.
 - d. Describe the role of trade organizations, associations, and unions as related to Furniture Manufacturing & Upholstering.
16. Demonstrate related academic skills and workplace skills associated with Furniture Manufacturing & Upholstering.
- a. Complete a cooperative project (paper, presentation, or demonstration) associated with an academic subject and Furniture Manufacturing & Upholstering.
 - b. Practice human relations skills (team participation, client/customer service, leadership, negotiation, working with culturally diverse populations, etc.) related to Furniture Manufacturing & Upholstering.
 - c. Research work ethics and employer expectations of employees in Furniture Manufacturing & Upholstering.
17. Investigate the concepts of quality assurance as related to Furniture Manufacturing & Upholstering.
- a. Describe quality concepts and methods for measuring quality related to Furniture Manufacturing & Upholstering.
 - b. Apply quality concepts in the Furniture Manufacturing & Upholstering laboratory.
18. Examine trends and changes related to Furniture Manufacturing & Upholstering and global economic factors.
- a. Define and discuss the concept of global economics and competition.
 - b. Describe global economic factors and competition as related to Furniture Manufacturing & Upholstering.
 - c. Identify regions and other countries which compete in Furniture Manufacturing & Upholstering.

SECTION III:
RECOMMENDED TOOLS AND EQUIPMENT

RECOMMENDED TOOLS AND EQUIPMENT
FOR
FURNITURE MANUFACTURING & UPHOLSTERING

1. Air Compressor (with regulator and hose) (1)
2. Bar, Bus (20') (1)
3. Cabinet, Ultraviolet (with safety glasses) (1)
4. Chisels, Wood (10)
5. Clamps, Bar (60") (10)
6. Clamps, C (8") (10)
7. Clamps, Quick Release (10)
8. Clamps, Spring (60") (10)
9. CNC Automated Cutting Equipment (trainer with software)(1)
10. Computers w/printers (10)
11. Cutter, Button (1)
12. Drill Bits, Set (3/32"-1")
13. Drill, Cloth (12")(1)
14. Drills, Portable Electric (3)
15. Drills, Portable Pneumatic (2)
16. Drill Press (1)
17. Dust Collection System (1)
18. File, Set (1)
19. Grinder, Pedestal (1)
20. Grinder, Portable (4 ½") (1)
21. Guns, Brad (2)
22. Guns, Clip (5)
23. Guns, Frame (10)
24. Guns, Gimp (2)
25. Guns, Clamp (3)
26. Guns, Upholstery (10)
27. Guns, Wide Crown (5)
28. Hacksaws (2)
29. Hammers, Claw (15)
30. Hammers, Dead Blow (10)
31. Hammers, Tack (10)
32. Jointer (6") (1)
33. Knives, Circular (2)
34. Knives, Cutting (2)
35. Knives, Fabric (8") (2)
36. Knives, Mini (3)
37. Knives, Polyfoam (2)
38. Machine, Button (1)
39. Machine, Cushion Stuffing (1)
40. Machine, Zipper (1)
41. Mallets, Wood (10)
42. Needles, Button (Diamond Point) (10)

43. Perforator (1)
44. Planes, Hand Set (2)
45. Planer (18") (1)
46. Pliers, Wire (5)
47. Plotter (1)
48. Ployslitter (1)
49. Rack, Metal Storage (20') (1)
50. Rippers, Seam (8)
51. Rules (12") (20)
52. Rules (36") (20)
53. Sander, Belt (3 ½" X 21") (1)
54. Sanders, Belt/Disc (Belt 6"X 48": Disc 12") (2)
55. Sanders, Hand (4 ½ " X 9" pad) (5)
56. Sanders, Hand (3"X5" pad) (5)
57. Saws, Band (4)
58. Saw, Chop (1)
59. Saw, Jig (2)
60. Saw, Miter (12") (1)
61. Saw, Portable Electric (1)
62. Saw, Radial Arm (2)
63. Saw, Rip (1)
64. Saw, Table (2)
65. Scissors (15)
66. Screwdrivers, Flat Blade Set (10)
67. Screwdrivers, Phillips Set (10)
68. Screwdrivers, Pneumatic Set (5)
69. Sewing Machines, Computerized (8)
70. Sharpener, Scissors (1)
71. Snips, Thread (8)
72. Software, Computer Drafting and Design (AutoCad or recognized standard) (10)
73. Squares, Easy (5)
74. Squares, L (10)
75. Squares, T (5)
76. Staple Pullers (15)
77. Table, Cutting (20') (1)
78. Table, Drafting (1)
79. Tables, Upholstery (14)
80. Tape Measures (½" X12') (20)
81. Vacuum, Shop (1)
82. Vise, Table (8") (1)
83. Wire Cutters (10)
84. Wrenches, Allen Set (2)
85. Wrench, Box End Set (¼" – 1¼") (1)
86. Wrench, Open End Set (¼"- 1¼ ") (1)
87. Wrench, Socket Set (¼"- 1¼") (1)

RECOMMENDED INSTRUCTIONAL AIDS

Recommend that teachers have access to:

1. Cart, AV (for TV-VCR) (1)
2. TV-VCR (1)
3. Video out (Microcomputer to TV monitor) (1)

APPENDIX A:
ACADEMIC STANDARDS

ALGEBRA I

Competencies and Suggested Objective(s)

A1. Recognize, classify, and use real numbers and their properties.

- a. Describe the real number system using a diagram to show the relationships of component sets of numbers that compose the set of real numbers.
- b. Model properties and equivalence relationships of real numbers.
- c. Demonstrate and apply properties of real numbers to algebraic expressions.
- d. Perform basic operations on square roots excluding rationalizing denominators.

A2. Recognize, create, extend, and apply patterns, relations, and functions and their applications.

- a. Analyze relationships between two variables, identify domain and range, and determine whether a relation is a function.
- b. Explain and illustrate how change in one variable may result in a change in another variable.
- c. Determine the rule that describes a pattern and determine the pattern given the rule.
- d. Apply patterns to graphs and use appropriate technology.

A3. Simplify algebraic expressions, solve and graph equations, inequalities and systems in one and two variables.

- a. Solve, check, and graph linear equations and inequalities in one variable, including rational coefficients.
- b. Graph and check linear equations and inequalities in two variables.
- c. Solve and graph absolute value equations and inequalities in one variable.
- d. Use algebraic and graphical methods to solve systems of linear equations and inequalities.
- e. Translate problem-solving situations into algebraic sentences and determine solutions.

A4. Explore and communicate the characteristics and operations of polynomials.

- a. Classify polynomials and determine the degree.
- b. Add, subtract, multiply, and divide polynomial expressions.
- c. Factor polynomials using algebraic methods and geometric models
- d. Investigate and apply real-number solutions to quadratic equations algebraically and graphically.
- e. Use convincing arguments to justify unfactorable polynomials.
- f. Apply polynomial operations to problems involving perimeter and area.

A5. Utilize various formulas in problem-solving situations.

- a. Evaluate and apply formulas (e.g., circumference, perimeter, area, volume, Pythagorean Theorem, interest, distance, rate, and time).
- b. Reinforce formulas experimentally to verify solutions.
- c. Given a literal equation, solve for any variable of degree one.
- d. Using the appropriate formula, determine the length, midpoint, and slope of a segment in a coordinate plane.
- e. Use formulas (e.g., point-slope and slope-intercept) to write equations of lines.

A6. Communicate using the language of algebra.

- a. Recognize and demonstrate the appropriate use of terms, symbols, and notations.
- b. Distinguish between linear and non-linear equations.
- c. Translate between verbal expressions and algebraic expressions.
- d. Apply the operations of addition, subtraction, and scalar multiplication to matrices.
- e. Use scientific notation to solve problems.
- f. Use appropriate algebraic language to justify solutions and processes used in solving problems.

A7. Interpret and apply slope as a rate of change.

- a. Define slope as a rate of change using algebraic and geometric representations.
- b. Interpret and apply slope as a rate of change in problem-solving situations.
- c. Use ratio and proportion to solve problems including direct variation ($y=kx$).
- d. Apply the concept of slope to parallel and perpendicular lines.

A8. Analyze data and apply concepts of probability.

- a. Collect, organize, graph, and interpret data sets, draw conclusions, and make predictions from the analysis of data.
- b. Define event and sample spaces and apply to simple probability problems.
- c. Use counting techniques, permutations, and combinations to solve probability problems.

BIOLOGY I

Competencies and Suggested Objective(s)

B1. Utilize critical thinking and scientific problem solving in designing and performing biological research and experimentation.

- a. Demonstrate the proper use and care for scientific equipment used in biology.
- b. Observe and practice safe procedures in the classroom and laboratory.
- c. Apply the components of scientific processes and methods in the classroom and laboratory investigations.
- d. Communicate results of scientific investigations in oral, written, and graphic form.

B2. Investigate the biochemical basis of life.

- a. Identify the characteristics of living things.
- b. Describe and differentiate between covalent and ionic bonds using examples of each.
- c. Describe the unique bonding and characteristics of water that makes it an essential component of living systems.
- d. Classify solutions using the pH scale and relate the importance of pH to organism survival.
- e. Compare the structure, properties and functions of carbohydrates, lipids, proteins and nucleic acids in living organisms.
- f. Explain how enzymes work and identify factors that can affect enzyme action.

B3. Investigate cell structures, functions, and methods of reproduction.

- a. Differentiate between prokaryotic and eukaryotic cells.
- b. Distinguish between plant and animal (eukaryotic) cell structures.
- c. Identify and describe the structure and basic functions of the major eukaryotic organelles.
- d. Describe the way in which cells are organized in multicellular organisms.
- e. Relate cell membrane structure to its function in passive and active transport.
- f. Describe the main events in the cell cycle and cell mitosis including differences in plant and animal cell divisions.
- g. Relate the importance of meiosis to sexual reproduction and the maintenance of chromosome number.
- h. Identify and distinguish among forms of asexual and sexual reproduction.

B4. Investigate the transfer of energy from the sun to living systems.

- a. Describe the structure of ATP and its importance in life processes.
- b. Examine, compare, and contrast the basic processes of photosynthesis and cellular respiration.
- c. Compare and contrast aerobic and anaerobic respiration.

B5. Investigate the principles, mechanisms, and methodology of classical and molecular genetics.

- a. Compare and contrast the molecular structures of DNA and RNA as they relate to replication, transcription, and translation.
- b. Identify and illustrate how changes in DNA cause mutations and evaluate the significance of these changes.
- c. Analyze the applications of DNA technology (forensics, medicine, agriculture).
- d. Discuss the significant contributions of well-known scientists to the historical progression of classical and molecular genetics.
- e. Apply genetic principles to solve simple inheritance problems including monohybrid crosses, sex linkage, multiple alleles, incomplete dominance, and codominance.
- f. Examine inheritance patterns using current technology (gel electrophoresis, pedigrees, karyotypes).

B6. Investigate concepts of natural selection as they relate to diversity of life.

- a. Analyze how organisms are classified into a hierarchy of groups and subgroups based on similarities and differences.
- b. Identify characteristics of kingdoms including monerans, protists, fungi, plants and animals.
- c. Differentiate among major divisions of the plant and animal kingdoms (vascular/non-vascular; vertebrate/invertebrate).
- d. Compare the structures and functions of viruses and bacteria relating their impact on other living organisms.
- e. Identify evidence of change in species using fossils, DNA sequences, anatomical and physiological similarities, and embryology.
- f. Analyze the results of natural selection in speciation, diversity, adaptation, behavior and extinction.

B7. Investigate the interdependence and interactions that occur within an ecosystem.

- a. Analyze the flow of energy and matter through various cycles including carbon, oxygen, nitrogen and water cycles.
- b. Interpret interactions among organisms in an ecosystem (producer/consumer/decomposer, predator/prey, symbiotic relationships and competitive relationships).
- c. Compare variations, tolerances, and adaptations of plants and animals in major biomes.
- d. Investigate and explain the transfer of energy in an ecosystem including food chains, food webs, and food pyramids.
- e. Examine long and short-term changes to the environment as a result of natural events and human actions.

ENGLISH II

Competencies and Suggested Objective(s)

E1. Produce writing which reflects increasing proficiency through planning, writing, revising, and editing and which is specific to audience and purpose.

- a. Produce individual and/or group compositions and/or projects to persuade, tell a story, describe, create an effect, explain or justify an action or event, inform, entertain, etc.
- b. Produce writing typically used in the workplace such as social, business, and technical correspondence; explanation of procedures; status reports; research findings; narratives for graphs; justification of decisions, actions, or expenses; etc.
- c. Write a response, reaction, interpretation, analysis, summary, etc., of literature, other reading matter, or orally presented material.
- d. Revise to ensure effective introductions, details, wording, topic sentences, and conclusions.

E2. Communicate ideas for a variety of school and other life situations through listening, speaking, and reading aloud.

- a. Listen to determine the main idea and supporting details, to distinguish fact from opinion, and to determine a speaker's purpose or bias.
- b. Speak with appropriate intonation, articulation, gestures, and facial expression.
- c. Speak effectively to explain and justify ideas to peers, to inform, to summarize, to persuade, to entertain, to describe, etc.

E3. Read, evaluate, and use print, non-print, and technological sources to research issues and problems, to present information, and to complete projects.

- a. Read, view, and listen to distinguish fact from opinions and to recognize persuasive and manipulative techniques.
- b. Access both print and non-print sources to produce an I-Search paper, research paper, or project.
- c. Use computers and audio-visual technology to access and organize information for purposes such as resumes, career search projects, and analytical writings, etc.
- d. Use reference sources, indices, electronic card catalog, and appropriate research procedures to gather and synthesize information.

- E4. Work individually and as a member of a team to analyze and interpret information, to make decisions, to solve problems, and to reflect, using increasingly complex and abstract thinking.**
- a. Interact with peers to examine real world and literary issues and ideas.
 - b. Show growth in critical thinking, leadership skills, consensus building, and self-confidence by assuming a role in a group, negotiating compromise, and reflecting on individual or group work.
- E5. Complete oral and written presentations which exhibit interaction and consensus within a group.**
- a. Share, critique, and evaluate works in progress and completed works through a process approach.
 - b. Communicate effectively in a group to present completed projects and/or compositions.
 - c. Edit oral and written presentations to reflect correct grammar, usage, and mechanics.
- E6. Explore cultural contributions to the history of the English language and its literature.**
- a. Explore a variety of works from various historical periods, geographical locations, and cultures, recognizing their influence on language and literature.
 - b. Identify instances of dialectal differences which create stereotypes, perceptions, and identities.
 - c. Recognize root words, prefixes, suffixes, and cognates.
 - d. Relate how vocabulary and spelling have changed over time.
- E7. Discover the power and effect of language by reading and listening to selections from various literary genres.**
- a. Listen to and read aloud selected works to recognize and respond to the rhythm and power of language to convey a message.
 - b. Read aloud with fluency and expression.
 - c. Analyze the stylistic devices, such as alliteration, assonance, word order, rhyme, onomatopoeia, etc., that make a passage achieve a certain effect.
 - d. Demonstrate how the use of language can confuse or inform, repel or persuade, or inspire or enrage.
 - e. Analyze how grammatical structure or style helps to create a certain effect.

E8. Read, discuss, analyze, and evaluate literature from various genres and other written material.

- a. Read and explore increasingly complete works, both classic and contemporary, for oral discussion and written analysis.
- b. Read, discuss, and interpret literature to make connections to life.
- c. Read from a variety of genres to understand how the literary elements contribute to the overall quality of the work.
- d. Identify qualities in increasingly complex literature that have produced a lasting impact on society.
- e. Read for enjoyment, appreciation, and comprehension of plot, style, vocabulary, etc.

E9. Sustain progress toward fluent control of grammar, mechanics, and usage of standard English in the context of writing and speaking.

- a. Infuse the study of grammar and vocabulary into written and oral communication.
- b. Demonstrate, in the context of their own writing, proficient use of the conventions of standard English, including, but not limited to, the following: complete sentences, subject-verb agreement, plurals, spellings, homophones, possessives, verb forms, punctuation, capitalization, pronouns, pronoun-antecedent agreement, parallel structure, and dangling and misplaced modifiers.
- c. Give oral presentations to reinforce the use of standard English.
- d. Employ increasingly proficient editing skills to identify and solve problems in grammar, usage, and structure.

E10. Use language and critical thinking strategies to serve as tools for learning.

- a. Use language to facilitate continuous learning, to record observations, to clarify thought, to synthesize information, and to analyze and evaluate language.
- b. Interpret visual material orally and in writing.

U. S. HISTORY FROM 1877

Competencies and Suggested Objective(s)

H1. Explain how geography, economics, and politics have influenced the historical development of the United States in the global community.

- a. Apply economic concepts and reasoning when evaluating historical and contemporary social developments and issues (e.g., gold standard, free coinage of silver, tariff issue, laissez faire, deficit spending, etc.).
- b. Explain the emergence of modern America from a domestic perspective (e.g., frontier experience, Industrial Revolution and organized labor, reform movements of Populism and Progressivism, Women's Movement, Civil Rights Movement, the New Deal, etc.).
- c. Explain the changing role of the United States in world affairs since 1877 through wars, conflicts, and foreign policy (e.g., Spanish-American War, Korean conflict, containment policy, etc.).
- d. Trace the expansion of the United States and its acquisition of territory from 1877 (e.g., expansionism and imperialism).

H2. Describe the impact of science and technology on the historical development of the United States in the global community.

- a. Analyze the impact of inventions on the United States (e.g., telephone, light bulb, etc.).
- b. Examine the continuing impact of the Industrial Revolution on the development of our nation (e.g., mass production, computer operations, etc.).
- c. Describe the effects of transportation and communication advances since 1877.

H3. Describe the relationship of people, places, and environments through time.

- a. Analyze human migration patterns since 1877 (e.g., rural to urban, the Great Migration, etc.).
- b. Analyze how changing human, physical, geographic characteristics can alter a regional landscape (e.g., urbanization, Dust Bowl, etc.).

H4. Demonstrate the ability to use social studies tools (e.g., timelines, maps, globes, resources, graphs, a compass, technology, etc.).

- a. Interpret special purpose maps, primary/secondary sources, and political cartoons.
- b. Analyze technological information on graphs, charts, and timelines.

- c. Locate areas of international conflict (e.g., Caribbean, Southeast Asia, Europe, etc.).

H5. Analyze the contributions of Americans to the ongoing democratic process to include civic responsibilities.

- a. Examine various reform movements (e.g., Civil Rights, Women's Movement, etc.).
- b. Examine the government's role in various movements (e.g., arbitration, 26th Amendment, etc.).
- c. Examine the role of government in the preservation of citizens' rights (e.g., 19th Amendment, Civil Rights Act of 1964).
- d. Examine individuals' duties and responsibilities in a democratic society (e.g., voting, volunteerism, etc.).

APPENDIX B:
WORKPLACE SKILLS

WORKPLACE SKILLS FOR THE 21ST CENTURY

- WP1 Allocates resources (time, money, materials and facilities, and human resources).
- WP2 Acquires, evaluates, organizes and maintains, and interprets/communicates information, including the use of computers.
- WP3 Practices interpersonal skills related to careers including team member participation, teaching other people, serving clients/customers, exercising leadership, negotiation, and working with culturally diverse.
- WP4 Applies systems concept including basic understanding, monitoring and correction system performance, and designing and improving systems.
- WP5 Selects, applies, and maintains/troubleshoots technology.
- WP6 Employs thinking skills including creative thinking, decision making, problem solving, reasoning, and knowing how to learn.
- WP7 Basic Skills: Employs basic academic skills including reading, writing, arithmetic and mathematics, speaking, and listening.
- WP8 Personal Qualities: Practices work ethics related to individual responsibility, integrity, honesty, and personal management.

APPENDIX C:
NATIONAL EDUCATIONAL TECHNOLOGY STANDARDS FOR STUDENTS

National Educational Technology Standards for Students

- T1 Basic operations and concepts
- Students demonstrate a sound understanding of the nature and operation of technology systems.
 - Students are proficient in the use of technology.
- T2 Social, ethical, and human issues
- Students understand the ethical, cultural, and societal issues related to technology.
 - Students practice responsible use of technology systems, information, and software.
 - Students develop positive attitudes toward technology uses that support lifelong learning, collaboration, personal pursuits, and productivity.
- T3 Technology productivity tools
- Students use technology tools to enhance learning, increase productivity, and promote creativity.
 - Students use productivity tools to collaborate in constructing technology-enhanced models, prepare publications, and produce other creative works.
- T4 Technology communications tools
- Students use telecommunications to collaborate, publish, and interact with peers, experts, and other audiences.
 - Students use a variety of media and formats to communicate information and ideas effectively to multiple audiences.
- T5 Technology research tools
- Students use technology to locate, evaluate, and collect information from a variety of sources.
 - Students use technology tools to process data and report results.
 - Students evaluate and select new information resources and technological innovations based on the appropriateness for specific tasks.
- T6 Technology problem-solving and decision-making tools
- Students use technology resources for solving problems and making informed decisions.
 - Students employ technology in the development of strategies for solving problems in the real world.

APPENDIX D:
STUDENT COMPETENCY PROFILES

STUDENT COMPETENCY PROFILE
FOR
FURNITURE MANUFACTURING & UPHOLSTERING I

Student: _____

This record is intended to serve as a method of noting student achievement of the competencies in each unit. It can be duplicated for each student and serve as a cumulative record of competencies achieved in the course.

In the blank before each competency, place the date on which the student mastered the competency.

Unit 1: Introduction to Furniture Manufacturing

- ___ 1. Explain the requirements and working conditions for employment in the upholstered furniture manufacturing industry.
- ___ 2. Explain the local school rules and regulations.
- ___ 3. Describe SkillsUSA activities pertaining to furniture manufacturing.

Unit 2: General Safety

- ___ 1. Explain the safety requirements for upholstered manufacturing.
- ___ 2. Identify hazardous materials that may be found on a job site and describe procedures for handling/avoidance or removal of materials.

Unit 3: Tool and Equipment Identification and Use

- ___ 1. Demonstrate use of hand tools found in upholstered furniture manufacturing.
- ___ 2. Demonstrate use of power tools found in upholstered furniture frame manufacturing.

Unit 4: Measurement

- ___ 1. Identify types of measuring devices used in furniture manufacturing.
- ___ 2. Perform mathematics essential to furniture manufacturing occupations.

Unit 5: Furniture Frame Patterns and Layout

- ___ 1. Identify terms and materials commonly used in frame manufacture.
- ___ 2. Identify types and styles of upholstered furniture.
- ___ 3. Create a working drawing.
- ___ 4. Apply a working drawing, including the layout and cutting of materials for a part from a working drawing.
- ___ 5. Prepare a bill of materials for the manufacture of a furniture frame.

Unit 6: Cutting and Assembling Frames

- ___1. Cut frames for upholstered furniture to specifications.
- ___2. Assemble frame parts to specifications using fastening devices.

Unit 7: Special Topics in Furniture Manufacturing & Upholstering I

- ___1. Investigate new and emerging technologies, practices, trends, and issues associated with Furniture Manufacturing & Upholstering.
- ___2. Complete school-to-careers activities related to Furniture Manufacturing & Upholstering.
- ___3. Demonstrate related academic skills and workplace skills associated with Furniture Manufacturing & Upholstering.
- ___4. Investigate the concepts of quality assurance as related to Furniture Manufacturing & Upholstering.
- ___5. Examine trends and changes related to Furniture Manufacturing & Upholstering and global economic factors.

STUDENT COMPETENCY PROFILE
FOR
FURNITURE MANUFACTURING & UPHOLSTERING II

Student: _____

This record is intended to serve as a method of noting student achievement of the competencies in each unit. It can be duplicated for each student and serve as a cumulative record of competencies achieved in the course.

In the blank before each competency, place the date on which the student mastered the competency.

Unit 1: Review of General Safety

- ___1. Review the safety requirements for upholstered manufacturing.
- ___2. Review hazardous materials that may be found on a job site and describe procedures for handling/avoidance or removal of materials.

Unit 2: Furniture Upholstery Tools

- ___1. Identify furniture upholstery tools and fasteners.
- ___2. Demonstrate the safe use of furniture upholstery tools.

Unit 3: Furniture Padding, Hardware, and Support System Components

- ___1. Identify padding and hardware components used in upholstered furniture manufacturing.
- ___2. Apply support system components.
- ___3. Apply upholstered furniture padding.

Unit 4: Measure, Layout, and Cut Fabrics

- ___1. Identify parts of furniture being manufactured.
- ___2. Identify fabric cutting procedures.

Unit 5: Sewing Procedures

- ___1. Identify types and basic parts of sewing machines.
- ___2. Operate a sewing machine.

Unit 6: Furniture Upholstery

- ___1. Identify the steps in furniture upholstery.
- ___2. Perform the steps in furniture upholstery.

Unit 7: Special Topics in Furniture Manufacturing & Upholstering II

- ___1. Investigate new and emerging technologies, practices, trends, and issues associated with Furniture Manufacturing & Upholstering.
- ___2. Complete school-to-careers activities related to Furniture Manufacturing & Upholstering.
- ___3. Demonstrate related academic skills and workplace skills associated with Furniture Manufacturing & Upholstering.
- ___4. Investigate the concepts of quality assurance as related to Furniture Manufacturing & Upholstering.
- ___5. Examine trends and changes related to Furniture Manufacturing & Upholstering and global economic factors.