

## Woodworking 3 Course Syllabus

8/21/07

**Course Title:** Woodworking 3

**Instructor:** Cary Haakenson,

**Textbook:** none

**Course Value:** .5 unit – 1 Semester

**Purpose:** The purpose of this course is to give students an introduction to machine woodworking. Areas of emphasis are machine operation, safety, project construction, and mass production. Emphasis is placed on proper planning, processing, and problem-solving in a manufacturing setting.

**Course Outcomes:** The student will:

1. Know all safety rules related to machines used in the semester
2. Operate all the machines listed above.
3. Read for understanding a simple two-view working drawing.
4. Understand the purpose of a process sheet and be able to follow effectively the steps of a process sheet
5. Create a process sheet for a single piece of wood
6. Read effectively a scale with 1/64 inch graduations
7. Know and effectively use basic wood terminology: face, edge, length, ripping, etc.
8. Use appropriate problem solving techniques.
9. Work cooperatively with others.

**Course Goals:** The student will leave with:

1. Transferable skills which will be usable in many fields and applications.
2. A better knowledge of what gifts of interest and ability God has given to him/her.
3. A better knowledge and confidence in "how to learn".

**School Exit Outcomes:**

- #2. The students will develop their critical thinking and problem solving skills as they work through the process of designing a project, creating a step-by-step process sheet for making the project, and then building the project.
- #3. Effective communication and cooperative working skills will be enhanced as students complete a mass production project.
- #4. The skills learned in this course will serve as a basis for safe and meaningful experiences in further classes, work places, and home recreational pursuits.
- #5. As students work through the projects they will discover and develop any special interests, skills, and/or talents and abilities in the field of woodworking which they may use in service to their Lord.
- #6. Students will enhance their technological literacy as they use a computer-driven lathe to complete a CNC project.

- #7. By constructing a variety of projects, the students will explore possible areas for career or hobby.

**Department Outcomes:**

1. The students will apply the problem-solving process to challenging situations.
2. The students will work cooperatively and assist others in a common goal, resolve differences in a productive manner, and respect and adapt to differences in others. (2.1, 2.2, 2.5)
3. The students will become self-directed learners who recognize the need to adapt to rapidly changing technologies, identify their own personal abilities and interests, develop their gifts, and use their abilities and interests for God-pleasing recreation. (3.1, 3.4, 3.5)
4. The students will use their gifts in service to the Kingdom, practice stewardship of natural resources, and practice safe work habits. (4.3, 4.4)
5. The students will explore technologies and produce products with high quality standards. (5.1-4)
6. The students will be effective communicators who follow verbal and written directions and who communicate clearly and precisely. (6.1, 6.2)

**Unit 1: Box Project**

- Review steps in manufacturing. (idea, sketch, dimensioned drawing, bill of materials, process sheet)
- Review skills/procedure for making a dimensioned drawing.
- Discuss/review the general procedures for processing wood.
  1. Thickness > Width > Length
  2. List all steps clearly and completely so that others can duplicate the project.
- Discuss joinery.
  1. Box, rabbet, dovetail, butt, lap, dado, groove.
  2. Pros and cons of each type of joint.
  3. Need for accuracy and precision.
- Assembly.

Number of days: 30 - 35

S.O.: 2, 5, 6

D.O.: 1.1, 3.2, 3.4, 4.3, 4.4, 5.4

W.S.S.: B2, C1, C4, C6

**Unit 2: Lamination Project**

- Discussion of laminate materials and uses.
- Application procedures.

Number of days: 5 - 7

S.O.:2, 6

D.O.: 3.3, 3.4, 4.3, 4.4, 5.1, 5.3, 5.4, 6.1

W.S.S.: C4, C6

### **Unit 3: Solid Surface Project**

- Discussion of the purposes and uses of solid surface materials
- Machining the and shaping the material
  1. follow the same procedures as if working with wood
  2. must use carbide bits to cut and shape
- Finishing and polishing
  1. begin with 100 grit and work through the grits to 320 grit
  2. use wet-and-dry 400 and 1500 grit
  3. buff out using buffing compound on buffing wheel
- Pen construction
- Turn barrel blanks on the CNC lathe
  1. carefully drill wood blanks
  2. careful to keep close tolerances
- Sand and finish barrels
- Pen assembly

Number of days: 25

S.O.: 2, 5, 6,

D.O.: 4.2, 4.3, 4.4, 5.3, 5.4

W.S.S.: B5, B7

### **Unit 4. Cross/Puzzle Project**

- Discuss concept of mass production and cooperative processing
  1. creating multiple, interchangeable parts
- Working cooperatively
- Reproduction of multiple parts.
  1. Use of jigs, fixtures, and dado head
  2. Accuracy, repeatability, tolerances.
  3. Joinery, inlays.
- Develop proper technique in making a crosslap joint

Number of days: 30 - 35

S.O.: 2, 3, 4, 6

D.O.: 1, 2.1, 2.5, 3.1, 3.4, 4.3, 4.4, 5.1, 5.4, 6.1, 6.2

W.S.S.: B3, C1, C4

## **APPENDIX**

COURSE: WOOD 3

INSTRUCTOR: CARY HAAKENSEN

### **Unit 1: Box Project**

- 1.1 Apply the problem-solving process to challenging situations
- 3.2 Identify and evaluate trends in the work place
- 3.4 Develop their gifts
- 4.3 Practice Christian stewardship of natural resources
- 4.4 Recognize and practice effective work habits

5.4 Produce products with high quality standards

**Unit 2: Laminate Project**

3.3 Identify their own personal abilities and interests

3.4 Develop their gifts

4.3 Practice Christian stewardship of natural resources

4.4 Recognize and practice effective work habits

5.1 Apply mathematical and scientific principles to industrial applications

5.3 Produce products by using current technology

5.4 Produce products with high quality standards

6.1 Follow verbal and written direction

**Unit 3: Solid Surface Project**

4.2 Recognize environmental dangers

4.3 Practice Christian stewardship of natural resources

4.4 Recognize and practice effective work habits

5.3 Produce products by using current technology

5.4 Produce products with high quality standards

**Unit 4: Crosses/Burr Puzzle**

1.1 Apply the problem-solving process to challenging situations

2.1 Assist others in a common goal

2.5 Respect and adapt to differences in others

3.1 Recognize the need to be a life-longer learner

3.4 Develop their gifts

4.3 Practice Christian stewardship of natural resources

4.4 Recognize and practice effective work habits

5.1 Apply mathematical and scientific principles to industrial applications

5.4 Produce products with high quality standards

6.1 Follow verbal and written direction

6.2 Communicate clearly and precisely

**WISCONSIN STATE STANDARDS**

**Unit 1**

B2 Demonstrate how systems are planned, organized, designed, built, and controlled

C1 Implement and evaluate strategies to solve technological problems that are likely to be successful

C2 Measure, collect, and analyze data in order to solve a technological problem

C4 Select materials and other resources for a technological design and develop practical solutions

C6 Design and/or create solutions that are functional, aesthetically pleasing, demonstrate quality, have value greater than the investment, and meet a societal want or need

**Unit 2**

C4 Select materials and other resources for a technological design and develop practical solutions

C6 Design and/or create solutions that are functional, aesthetically pleasing, demonstrate quality, have value greater than the investment, and meet a societal want or need

### **Unit 3**

B5 Asses the impact new and improved products and services have had on the quality of life; explain how the development of new tools, materials and processes is necessary to maintain and improve high productivity and quality

B7 Explain how new and higher quality products require new and higher quality materials and processing techniques

### **Unit 4**

B3 Explain how enterprises apply technological systems for generating wealth by providing goods and services

C1 Implement and evaluate strategies to solve technological problems that are likely to be successful

C4 Select materials and other resources for a technological design and develop practical solutions