

COURSE: *ADVANCED WOODWORKING*

8/07

CREDIT: 1 Unit – 1 Year

INSTRUCTOR: L. Westphal

TEXTBOOK: NONE

COURSE PURPOSE:

The purpose of this course is to further train those students who have given serious consideration to the skills and abilities that God has blessed them with and who have determined that a career in woodworking or a related field is potentially for them. Students considering careers in Cabinetmaking, Millworking, Solid Surface and Plastic Laminate Fabrication, CNC Machining, and related fields will benefit from this course.

COURSE OUTCOMES:

The student will –

1. Develop an advanced-level project from the idea-stage to the final product. This will include product selection, development, final drawing, processing plans, machining processes, assembly, and finishing.
2. Explore career opportunities by writing a report on a career of the student's choice which is related to one of the careers listed above.
3. Complete one service-related project
4. Learn and apply proper machine maintenance and repair procedures.
5. Make one project using CAD/CAM machining.
6. Demonstrate proper finishing techniques by creating a variety of finishing samples.
7. Demonstrate proficiency on all woodworking machines, portable and stationary, by completing a competency check list.
8. Demonstrate understanding of joinery by making a variety of basic joints.

COURSE GOALS:

The student will –

1. Grow stronger in applying Christ-centered values and principles in his/her approach to work.
2. Appreciate fine craftsmanship and desire to set high standards for his/her work.
3. Enjoy the class and, in the process, determine more about their future career choice.
4. Learn the value of setting goals and applying a formal process to problem solving.

COURSE OUTLINE:

UNIT ONE: REVIEW

- Demonstrate knowledge and application of all safety rules.
- Demonstrate competency in shop-related mathematics and scale reading.
- Demonstrate competency of all basic woodworking skills and machine operations.
- Demonstrate understanding of problem solving steps and goal setting

Number of days: 18-20 (plus on-going throughout the year)

S.O. – 4, 6, 7

D.O. – 3.4, 3.5, 4.4, 5.1, 5.4, 6.1

W.S.S. B1, B2, B8, C1, C4

UNIT TWO: JOINERY

- List the characteristics that should be considered when evaluating the correct joint to use for a given application.
- Identify common woodworking joints
- Demonstrate the ability to make the woodworking joints commonly used to make furniture and cabinets

Number of days: 15-16

S.O. – 4, 6, 7

D.O. – 3.2, 3.4, 3.5, 4.4, 5.1, 5.4, 6.1

W.S.S. - B1, B2, B5, B8

UNIT THREE: BLUEPRINT READING - PREPROCESSING

- Demonstrate the ability to read and understand typical furniture and cabinet drawings.
- Demonstrate the ability to prepare a bill of materials with rough and finished sizes for the above drawings.
- Demonstrate the ability to prepare complete process sheets for various types of materials for the above drawings.

Number of days: 3-4 (plus on-going throughout the year)

S.O. – 4, 6, 7

D.O. – 3.4, 3.5, 4.4, 5.1, 5.4, 6.1, 6.2, 6.3

W.S.S. - B1, B2, B8

UNIT FOUR: WOOD IDENTIFICATION

- Demonstrate the ability to properly identify commonly used cabinet woods by sight
- Be able to describe relevant characteristics of commonly used cabinet woods

Number of days: 2-3

S.O. – 4, 6, 7

D.O. – 3.4, 3.5, 4.4, 5.1, 5.4, 6.1, 6.2, 6.3

W.S.S. - A2, B2, B4, C4, C6

UNIT FIVE: MACHINE MAINTENANCE

- Demonstrate the importance and knowledge of preventative machine maintenance by maintaining the shop machines as assigned by the instructor.

Number of days: 1 (plus on-going throughout the year)

S.O. – 1, 6, 7

D.O. – 2.1, 2.2, 4.3

W.S.S. - B2

UNIT SIX: SERVICE PROJECT

- Demonstrate an appreciation for using God-given skills and time to serve others. Using skills already learned, perform an act of service by making or repairing a product for the school or other church-connected organization as assigned by the instructor.

Number of days: Variable (no more than 20)

S.O. – 1, 2, 5, 6, 7

D.O. – 1.1, 2.1, 2.2, 3.4, 4.1, 4.4, 5.1, 5.4, 6.1

W.S.S. - NONE

UNIT SEVEN: CAD/CAM/CNC

- Define CAD/CAM/CNC
- Describe the benefits and applications of CAD/CAM/CNC processing
- Design and make a project using CAD/CAM/CNC on the CNC lathe or mill

Number of days: 9-10

S.O. – 4, 6, 7

D.O. – 3.1, 3.2, 3.3, 3.4, 3.5, 4.4, 5.1, 5.2, 5.3, 5.4, 6.1, 6.3

W.S.S. - A1, A3, A7, B1, B2, B5, B8, C4, C5, C6, C9

UNIT EIGHT: FINISHING

- List the major steps in the finishing process
- Describe the purpose of the various steps in the finishing process
- Experiment with final finish options and evaluate the results
- Choose and apply an appropriate finish for the major project.

Number of days: 10-12

S.O. – 4, 6, 7

D.O. – 1.1, 3.2, 3.4, 3.5, 4.2, 4.3, 4.4, 5.2, 5.3, 5.4, 6.1

W.S.S. - A1, A2, A3, A7, B1, B5

UNIT NINE: CAREER EVALUATION

- Prepare a report on a career that is related to the woodworking field.

Number of days: 1
S.O. – 5
D.O. – 3.4, 6.2
W.S.S. - NONE

UNIT TEN: MAJOR PROJECT

- Prepare all drawings and process plans for the major project of the student's choice.
- Evaluate alternative designs and process choices based on good design principles.
- Make the project

Number of days: 80-100

S.O. – 2, 4, 6, 7

D.O. – 1.1, 3.2, 3.4, 3.5, 4.3, 4.4, 5.1, 5.4, 6.1, 6.3

W.S.S. - B2, B3, B5, B8, C1, C3, C4, C5, C6, C9

INSTRUCTIONAL STRATEGIES:

Lecture: 5%

Demonstration: 10%

Lab work: 85%

GRADING:

Quarter 1

Quizzes & assignments: 30%

Competencies/Joinery: 40%

Goal Sheet/Class evaluation: 30%

Quarter 2

Quizzes & assignments: 25%

Competencies: 25%

Project(s): 25%

Goal Sheet/Class evaluation: 25%

Semester Grade: Qt. 1 - 50% Qt. 2 - 50%

Quarter 3

Finishing: 20%

Quizzes & assignments: 10%

Competencies: 20%

Goal Sheet/Class evaluation: 20%

Project(s): 30%

Quarter 4

Quizzes: 20%

Career report: 10%

Goal Sheet/Class evaluation: 20%

Project work: 50%

Semester Grade: Qt. 1 - 50% Qt. 2 - 50%

APPENDIX:

COURSE: ADVANCED WOODWORKING

INSTRUCTOR: LEE WESTPHAL

UNIT ONE: REVIEW

- 3.4 Develop their gifts
- 3.5 Use abilities and interests for God-pleasing recreation
- 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

UNIT TWO: JOINERY

- 3.2 Identify and evaluate trends in the work place
- 3.4 Develop their gifts
- 3.5 Use abilities and interests for God-pleasing recreation
- 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

UNIT THREE: BLUEPRINT READING - PREPROCESSING

- 3.4 Develop their gifts
- 3.5 Use abilities and interests for God-pleasing recreation
- 4.4 Recognize and practice effective work habits
- 5.1 Apply mathematical and scientific principles to industrial applications
- 5.2 Produce products with high quality standards

- 6.1 Follow verbal and written direction
- 6.2 Communicate clearly and precisely
- 6.3 Read technical literature and/or drawings effectively

UNIT FOUR: WOOD IDENTIFICATION

- 3.4 Develop their gifts
- 3.5 Use abilities and interests for God-pleasing recreation
- 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
- 6.3 Read technical literature and/or drawings effectively

UNIT FIVE: MACHINE MAINTENANCE

- 2.1 Assist others in a common goal
- 2.2 Contribute to a common goal
- 4.3 Practice Christian stewardship of natural resources

UNIT SIX: SERVICE PROJECT

- 1.1 Apply the problem-solving process to challenging situations
- 2.1 Assist others in a common goal
- 2.2 Contribute to a common goal
- 3.4 Develop their gifts
- 4.1 Use their gifts for the good of God's kingdom in service projects
- 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

UNIT SEVEN: CAD/CAM

- 3.1 Recognize the need to be a life-long learner
- 3.2 Identify and evaluate trends in the work place
- 3.3 Identify their own personal abilities and interests
- 3.4 Develop their gifts
- 3.5 Use abilities and interests for God-pleasing recreation
- 4.4 Recognize and practice effective work habits
- 5.1 Apply mathematical and scientific principles to industrial applications
- 5.2 Explore technologies
- 5.3 Produce products by using current technology
- 5.4 Produce products with high quality standards
- 6.1 Follow verbal and written direction
- 6.3 Read technical literature and/or drawings effectively

UNIT EIGHT: FINISHING

- 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
- 3.5 Use abilities and interests for God-pleasing recreation
- 4.2 Recognize environmental dangers
- 4.3 Practice Christian stewardship of natural resources
- 4.4 Recognize and practice effective work habits

- 5.2 Explore technologies
- 5.3 Produce products by using current technology
- 5.4 Produce products with high quality standards
- 6.1 Follow verbal and written direction

UNIT NINE: CAREER EVALUATION

- 3.4 Develop their gifts
- 6.2 Communicate clearly and precisely

UNIT TEN: MAJOR 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
- 3.5 Use abilities and interests for God-pleasing recreation
- 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
- 6.3 Communicate clearly and precisely

Wisconsin State Standards

UNIT ONE: REVIEW

- B1 Identify and explain the ways technological systems have evolved and will continue to evolve to satisfy human needs and desires
- B2 Demonstrate how systems are planned, organized, designed, built, and controlled
- B8 Select and apply appropriate processes to transform information into its most useful format
- 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

UNIT TWO: JOINERY

- B1 Identify and explain the ways technological systems have evolved and will continue to evolve to satisfy human needs and desires
- B2 Demonstrate how systems are planned, organized, designed, built, and controlled
- B5 Assess 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
- B8 Select and apply appropriate processes to transform information into its most useful format
- C4 Select materials and other resources for a technological design and develop practical solutions

UNIT THREE: BLUEPRINT READING - PREPROCESSING

- B1 Identify and explain the ways technological systems have evolved and will continue to evolve to satisfy human needs and desires

- B2 Demonstrate how systems are planned, organized, designed, built, and controlled
- B8 Select and apply appropriate processes to transform information into its most useful format

UNIT FOUR: WOOD IDENTIFICATION

- A2 Understand that humans are faced with moral and ethical issues because technology is enabling very significant modifications to the natural world
- B2 Demonstrate how systems are planned, organized, designed, built, and controlled
- B4 Illustrate how resources are essential to technological activity but that their availability and quality vary extensively throughout the world
- 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 FIVE: MACHINE MAINTENANCE

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

UNIT SIX: SERVICE PROJECT

W.S.S. - NONE

UNIT SEVEN: CAD/CAM

- A1 Contrast the increasing complexities of technology with its ease of use
- A3 Explain why decisions regarding the use of technology are dependent on the situation, application, or perception of the group using it
- A7 Explain how scientific and technological research can contribute to improved quality of life and a better standard of living
- B1 Identify and explain the ways technological systems have evolved and will continue to evolve to satisfy human needs and desires
- B2 Demonstrate how systems are planned, organized, designed, built, and controlled
- 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
- B8 Select and apply appropriate processes to transform information into its most useful format
- C4 Select materials and other resources for a technological design and develop practical solutions
- C5 Identify constraints present in a given technological processes
- 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
- C9 Apply basic engineering concepts in the design and creation of solutions to various problems or Opportunities

UNIT EIGHT: FINISHING.

- A1 Contrast the increasing complexities of technology with its ease of use
- A2 Understand that humans are faced with moral and ethical issues because technology is enabling very significant modifications to the natural world
- A3 Explain why decisions regarding the use of technology are dependent on the situation, application, or perception of the group using it
- A7 Explain how scientific and technological research can contribute to improved quality of life and a better standard of living
- B1 Identify and explain the ways technological systems have evolved and will

continue to evolve to satisfy human needs and desires

- 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

UNIT NINE: CAREER EVALUATION

W.S.S. - NONE

UNIT TEN: MAJOR PROJECT

- B2 Demonstrate how systems are planned, organized, designed, built, and controlled
- B3 Explain how enterprises apply technological systems for generating wealth by providing goods and services
- 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
- B8 Select and apply appropriate processes to transform information into its most useful format
- 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
- C5 Identify constraints present in a given technological processes
- 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
- C9 Apply basic engineering concepts in the design and creation of solutions to various problems or opportunities