COURSE: CONSTRUCTION SKILLS 8/21/07

CREDIT: ½ UNIT – 1 SEMESTER

INSTRUCTOR: C. Haakenson

PREREQUISITE: Successful completion of Woodworking 2

TEXTBOOK: NONE

PURPOSE: The purpose of this course is to give students opportunity to explore various fields of the building industry with the intent that the student will learn valuable vocational skills while potentially determining a possible career path. Students considering a career as a Carpenter, Electrician, Plumber, Roofer, Mason, or other Building Trade professions should take this course.

COURSE OUTCOMES:

The student will -

1. Gain basic knowledge of the steps necessary to complete the building process, primarily as it relates to a residence.

2. Learn the legal requirements as they pertain to the building process; i.e., building codes, zoning restrictions, easements, architectural covenants, and deed restrictions.

3. Learn to operate basic equipment related to the following building trades carpentry, electrical, and masonry.

4. Explore career opportunities in the building trades by writing a report on a career of the student's choice.

5. Become competent in reading basic architectural drawings.

6. While working in pairs or groups, build a small structure (shed or similar structure).

7. Become competent in safely performing basic procedures in masonry, electrical wiring, and carpentry.

COURSE GOALS:

The student will grow in his/her Christian work habits; i.e., attendance, punctuality, cooperation, initiative, positive attitude, reliability, etc..

SCHOOL OUTCOMES:

This course specifically supports outcome numbers 2, 3, 4, 5, and 6.

#2 - Critical analysis, problem solving, and decision making are inherent in almost everything the student does in constructing the building and demonstrating his competencies in the various fields.

#3 - Cooperation with others is stressed throughout the class. Students work in pairs to achieve their competency requirements and in groups while constructing the class project.

#4 - Students are encouraged to realize that legal requirements constantly change and thus necessitate on-going up-dating of their knowledge of those requirements. Students are also encouraged to be resourceful in learning on their own.

#5 - Through the group process of building the class project, students realize that each student contributes different skills and abilities. Also, over the years, the class project has most often been a building utilized by a church-related organization (Camp Phillip, Lutheran Pioneers, etc.).

#6 - While demonstrating the various required competencies, the student must apply previously learned quantitative and scientific principles.

DEPARTMENT OUTCOMES:

This course supports all of the department's outcomes.

CULMINATING PERFORMANCE ASSESSMENT:

The students, working as a group, will construct a small cabin or shed.

COURSE OUTLINE:

UNIT ONE: COURSE OVERVIEW

Learn the steps in the building process from site selection to roughed-in structure.

Define the terms relative to the legal restrictions and requirements of the building process and explain the differences.

Number of days: 6-7
S.O.: 1.2.3.4.5.6
D.O.: 1, 2.1, 2.2, 2.3, 2.4, 2.5, 3.1, 3.2, 3.3, 3.4, 4.4, 5.4
W.S.S. - A4, A7, B2, D5, D6

UNIT TWO: ARCHITECTURAL DRAWING READING

Demonstrate knowledge of blueprint reading by defining related terms, interpreting basic views and elevations, and completing a bill of materials related to architectural drawings.

Demonstrate competence in trade-related mathematics as it relates to measuring, calculating sizes, and estimating quantities and costs.

Number of days: 5-7
S.O.: 4. 6
D.O.: 1, 3.1, 3.2, 3.3, 3.4, 5.1, 6.1, 6.2, 6.3
W.S.S. - B2, B8

UNIT THREE: BUILDING CODE OF WISCONSIN

Learn to interpret and apply the Uniform Building Code of Wisconsin as it relates to carpentry and masonry.

Number of days: 3-4
S.O.: 4, 6
D.O.: 3.3, 3.4, 5.1, 6.1, 6.2, 6.3
W.S.S. - B2, B8

UNIT FOUR: TRADE MATHEMATICS

Demonstrate competency in basic trade mathematics:

1. Adding, subtracting, multiplying, and dividing fractions, mixed numbers, and decimals.
2. Adding and subtracting linear dimensions in various forms
3. Calculating area and volume problems

Define linear, area, and volume as they relate to construction problems and applications.
Number of days: 2-3
S.O.: 3, 4, 6
D.O.: 1, 2.1, 2.2, 2.3, 2.4, 2.5, 3.3, 3.4, 4.2, 4.3, 4.4, 5.1, 5.4, 6.1, 6.2, 6.3
W.S.S. - B2, B8

UNIT FIVE: MASONRY

Learn fundamental terms related to masonry.
Demonstrate basic competence in safely processing concrete by making a patio block.

Number of days: 3-4
S.O.: 3, 4, 6
D.O.: 1, 2.1, 2.2, 2.3, 2.4, 2.5, 3.3, 3.4, 4.2, 4.3, 4.4, 5.1, 5.4, 6.1, 6.2, 6.3
W.S.S. - B2, B8

UNIT SIX: CARPENTRY

Learn the carpentry terms related to wall and floor construction
Learn the terms related to lumber sizing
Demonstrate understanding of the above by laying out a sample wall

Number of days: 3-4
S.O.: 3, 4, 6
D.O.: 1, 2.1, 2.2, 2.3, 2.4, 2.5, 3.3, 3.4, 4.2, 4.3, 4.4, 5.1, 5.4, 6.1, 6.2, 6.3
W.S.S. - B2, B8

UNIT SEVEN: RAFTER LAYOUT

Learn the carpentry terms related to rafters and rafter layout
Learn the various methods for laying out and checking rafters
Demonstrate understanding of the above by laying out a sample rafter

Number of days: 6-7
S.O.: 3, 4, 6
D.O.: 1, 2.1, 2.2, 2.3, 2.4, 2.5, 3.3, 3.4, 4.2, 4.3, 4.4, 5.1, 5.4, 6.1, 6.2, 6.3
W.S.S. - B2, B8

UNIT EIGHT: STAIR LAYOUT

Learn the carpentry terms related to stair layout
Learn the Wisconsin Building Codes related to stair layout
Demonstrate understanding of the above by laying out a sample stair

Number of days: 4-5
S.O.: 3, 4, 6
D.O.: 1, 2.1, 2.2, 2.3, 2.4, 2.5, 3.3, 3.4, 4.2, 4.3, 4.4, 5.1, 5.4, 6.1, 6.2, 6.3
W.S.S. - B2, B8

UNIT NINE: ELECTRICAL HOUSE WIRING

Learn fundamental terms related to electrical house wiring.
Learn basic Wisconsin Building Codes related to electrical house wiring.
Demonstrate basic competence in safely wiring simple electrical house circuits.

Number of days: 3-4
S.O.: 2, 3, 4, 6
D.O.: 1, 2.1, 2.2, 2.3, 2.4, 2.5, 3.3, 3.4, 4.2, 4.3, 4.4, 5.2, 5.3, 5.4, 6.1, 6.2, 6.3
W.S.S. - B2, B8

UNIT TEN: CAREERS

Analyze and evaluate a potential building-related career by preparing a report on a career of the student's choice.

Number of days: 2
S.O.: 3, 5, 7
D.O.: 3.2, 3.3, 6.2
W.S.S. - None

UNIT ELEVEN: INTRODUCTION TO SHED CONSTRUCTION

Identify, describe, and use safely fundamental carpentry tools; hand tools, power tools, and pneumatic nailers.
Learn the purpose of pressure treated lumber and how to process it safely.
Learn the sizing system, identity, and purpose of nails related to carpentry applications

Number of days: 4-5
S.O.: 2, 3, 4, 6
D.O.: 1, 2.1, 2.2, 2.3, 2.4, 2.5, 3.3, 3.4, 4.4, 5.2, 5.3, 5.4, 6.1, 6.2, 6.3
W.S.S. - A2, A4, A7, B1, B5, C4

UNIT TWELVE: SHED CONSTRUCTION

Demonstrate understanding of and competence in the entire building process by constructing a shed.

Number of days: 35-40
S.O.: 1, 2, 3, 4, 5, 6, 7
D.O.: 1, 2.1, 2.2, 2.3, 2.4, 2.5, 3.3, 3.4, 4.3, 4.4, 5.1, 5.2, 5.3, 5.4, 6.1, 6.2, 6.3
W.S.S. - A3, B2, B5, B8

INSTRUCTIONAL STRATEGIES:

Lecture - 10%
Demonstration - 10%
Class discussion - 20%
Lab work - 60%

GRADING:

Quarter 1:

Quizzes - 25%
Homework - 25%
Competencies - 25%
Quarter test - 25%

Quarter 2:
Career report - 25%
Quizzes - 25%
Class evaluation - 25%
Competencies - 25%

Final grade: Quarter 1 - 40% Quarter 2 - 40% Final Exam - 20%

APPENDIX:

COURSE: CONSTRUCTION SKILLS
INSTRUCTOR: LEE WESTPHAL

UNIT ONE: COURSE OVERVIEW

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
2.3 Resolve differences of opinion in a productive manner
2.4 Encourage others
2.5 Respect and adapt to differences in others
3.1 Recognize the need to be a life-longer 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
4.4 Recognize and practice effective work habits
5.4 Produce products with high quality standards

UNIT TWO: ARCHITECTURAL DRAWING READING

1.1 Apply the problem-solving process to challenging situations
3.1 Recognize the need to be a life-longer 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
5.1 Apply mathematical and scientific principles to industrial applications
6.1 Follow verbal and written direction
6.2 Communicate clearly and precisely
6.3 Read technical literature and/or drawings effectively

UNIT THREE: BUILDING CODE OF WISCONSIN

3.3 Identify their own personal abilities and interests
3.4 Develop their gifts
5.1 Apply mathematical and scientific principles to industrial applications
6.1 Follow verbal and written direction
6.2 Communicate clearly and precisely
6.3 Read technical literature and/or drawings effectively

UNIT FOUR: TRADE MATHEMATICS

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
2.3 Resolve differences of opinion in a productive manner
2.4 Encourage others
2.5 Respect and adapt to differences in others
3.3 Identify their own personal abilities and interests
3.4 Develop their gifts
4.2 Recognize environmental dangers
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
6.3 Read technical literature and/or drawings effectively

UNIT FIVE: MASONRY

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
2.3 Resolve differences of opinion in a productive manner
2.4 Encourage others
2.5 Respect and adapt to differences in others
3.3 Identify their own personal abilities and interests
3.4 Develop their gifts
4.2 Recognize environmental dangers
4.3 Practice Christian stewardship of natural resources
4.4 Recognize and practice effective work habits
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 SIX: CARPENTRY

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
2.3 Resolve differences of opinion in a productive manner
2.4 Encourage others
2.5 Respect and adapt to differences in others
3.3 Identify their own personal abilities and interests
3.4 Develop their gifts
4.2 Recognize environmental dangers
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
6.3 Read technical literature and/or drawings effectively

UNIT SEVEN: RAFTER LAYOUT

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
2.3 Resolve differences of opinion in a productive manner
2.4 Encourage others
2.5 Respect and adapt to differences in others
3.3 Identify their own personal abilities and interests
3.4 Develop their gifts
4.2 Recognize environmental dangers
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
6.3 Read technical literature and/or drawings effectively

UNIT EIGHT: STAIR LAYOUT

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
2.3 Resolve differences of opinion in a productive manner
2.4 Encourage others
2.5 Respect and adapt to differences in others
3.3 Identify their own personal abilities and interests
3.4 Develop their gifts
4.2 Recognize environmental dangers
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
6.3 Read technical literature and/or drawings effectively

UNIT NINE: ELECTRICAL HOUSE WIRING

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
2.3 Resolve differences of opinion in a productive manner
2.4 Encourage others
2.5 Respect and adapt to differences in others
3.3 Identify their own personal abilities and interests
3.4 Develop their gifts
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
6.2 Communicate clearly and precisely
6.3 Read technical literature and/or drawings effectively

UNIT TEN: CAREERS

3.2 Identify and evaluate trends in the work place
3.3 Identify their own personal abilities and interests
6.2 Communicate clearly and precise

UNIT ELEVEN: INTRODUCTION TO SHED CONSTRUCTION

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
2.3 Resolve differences of opinion in a productive manner
2.4 Encourage others
2.5 Respect and adapt to differences in others
3.3 Identify their own personal abilities and interests
3.4 Develop their gifts
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
6.2 Communicate clearly and precisely
6.3 Read technical literature and/or drawings effectively

UNIT TWELVE: SHED CONSTRUCTION

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
2.3 Resolve differences of opinion in a productive manner
2.4 Encourage others
2.5 Respect and adapt to differences in others
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
5.2 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
6.2 Communicate clearly and precisely
6.3 Read technical literature and/or drawings effectivelyA3, B2, B5, B8

WISCONSIN STATE STANDARDS

UNIT ONE: COURSE OVERVIEW

A4 Explore the way in which human adaptive technological systems interact with ideological and sociological systems
A7 Explain how scientific and technological research can contribute to improved quality of life and a better standard of living
B2 Demonstrate how systems are planned, organized, designed, built, and controlled
D5 Describe the current challenges and project the future challenges of governing a technology once it has become an integral part of the way people live, work, and play
D6 Show how the effects of a given technology may be unacceptable under one set of circumstances but acceptable under a different set of circumstances

UNIT TWO: ARCHITECTURAL DRAWING READING

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 THREE: BUILDING CODE OF WISCONSIN

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: TRADE MATHEMATICS

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 FIVE: MASONRY

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 SIX: CARPENTRY

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 SEVEN: RAFTER LAYOUT

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 EIGHT: STAIR LAYOUT

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 NINE: ELECTRICAL HOUSE WIRING

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 TEN: CAREERS

W.S.S. – None

UNIT ELEVEN: INTRODUCTION TO SHED CONSTRUCTION

A2 Understand that humans are faced with moral and ethical issues because technology is enabling very significant modifications to the natural world
A4 Explore the way in which human adaptive technological systems interact with ideological and sociological systems
A7 Explain how scientific and technological research can contribute to improved quality of life and a better standard of living
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
C4 Select materials and other resources for a technological design and develop practical solutions

UNIT TWELVE: SHED CONSTRUCTION

A3 Explain why decisions regarding the use of technology are dependent on the situation, application, or perception of the group using it
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