

COURSE OUTLINE

Construction Safety, Tools, & equipment
Course title

CT 112
Dept. & Course No.

I. COURSE DESCRIPTION:

This course is designed to give students knowledge of hand tools and power tools used to perform construction work. Emphasis is placed on skills needed to effectively perform layout, measurements, cutting, fastening, and finishing operations. Maintenance of tools and equipment will be addressed. Safe use of tools will be stressed

II. SEMESTER CREDITS: 2 CREDITS

III. CONTACT HOURS PER WEEK: 1 3 4
Lecture Lab Total

IV. PREREQUISITES: None

V. STUDENT LEARNING OUTCOME:

Upon completion of this course, students will be able, with 65% accuracy to:

1. Select clothing appropriate for work and weather conditions.
2. Select personal protective equipment for work.
3. Perform a good and safe housekeeping.
4. Identify terms associated with carpentry tools. Match them to their correct definitions.

VI. COURSE CONTENT

- A. Clothing
 1. Safety
 2. Working conditions
- B. Protective equipment
 1. Shoe
 2. Hard hat
 3. Safety glass
 4. Dust mask
- C. Housekeeping
 1. Desk & floor
 2. Scaffold & ladders
 3. Falling object
 4. Lifting and carrying heavy object
 5. Fire protection
- D. Types of tools
 1. Fasteners
 2. Cutting tools
 3. Planning & Smoothing
 4. Leveling & Plumbing
 5. Measuring & layout
 6. Prying & Clamping
 7. Shaping tools

5. Identify appropriate hand tools and demonstrate their proper use and care.

6. Choose appropriate power tools and demonstrate their proper use and care.

7. Layout line and measurement.

8. Cut and fasten wood including finishing operation.

8. Clearing and cleaning

E. Carpentry hand tools
1. Application & Use
2. Care & Maintenance

F. Power tools
1. Skill saw
2. Power plane
3. Electric drill
4. Bench Grinder
5. Sander
6. Table saw
7. Radial arm saw

G. Layout tools
1. Flexible steel tape
2. Framing square
3. Folding rule
4. Combination square
5. Try square
6. Chalk line
7. 3-4-5-method

H. Cutting tools
1. Hand saw
2. Table saw
3. Hack saw
4. Nail
5. Nail plate

VII. MATERIALS AND EQUIPMENT:

1. Hand tools
2. Overhead projector
3. Transparencies
4. Shop equipments
5. Power tools
6. Hand outs
7. TV & DVD
8. Transportation
9. Required Materials

VIII. TEXT AND REFERENCES:

1. TEXT: Instructor's made hand outs

2. REFERENCES:

- a. Wagner, Willis H. and Smith, Howard B. Modern Carpentry. South Holland, Ill: The Goodheart- Wilcox, 1996.
- b. Curriculum and Instructional Materials Center. Fundamentals of Carpentry. Stillwater, OK: Oklahoma Department of Vocational and Technical Education, 1999.

IX. METHOD OF INSTRUCTION:

1. Lecture
2. Discussion
3. Demonstration
4. Laboratory work
5. Field trips (Site observation)

X. METHOD OF EVALUATION:

Lecture presentation is tested on written test. Lab evaluation is based on skill development and knowledge acquisition.

Four criteria is used in evaluating projects and operation performance are:

1. Accuracy
2. Techniques
3. Appearance
4. Completion

The components used in the computation of the final grade are:

1. Participation.....	25%
2. Quizzes/Homework.....	10%
3. Mid – Term and Final Test.....	25%
4. Projects.....	40%
Total.....	100%

The transmutation of percent to letter grade are:

90 – 100.....	A
80 – 89.....	B
70 – 79.....	C
65 – 69.....	D
0 – 64.....	F

TASK LISTING SHEET

112 CONSTRUCTION SAFETY, TOOLS & EQUIPMENT
Course No. & Title

Credits: $\frac{1}{\text{Lec}}$ $\frac{1}{\text{Lab}}$ $\frac{48}{\text{Total Lab Hrs}}$

TASK

Hours

SLO #1&2

1 hr.

1. Wear appropriate clothing and protective device for a given job

SLO # 3

8 hrs.

1. Clean and organize working area
2. Secure scaffold and ladders safely
3. Arrange and secure object from falling
4. Demonstrate techniques of lifting and carrying heavy objects

SLO# 4

3 hrs.

1. Correctly match terms associated with carpentry hand tools
2. Apply personal safety rules
3. Apply general safety

SLO # 5

10 hrs.

1. Adjust a cutting edge of a plane blade
2. Planing and smoothing board surface
3. Cutting and carving mortise and tennon with chisel
4. Boring holes with brace and bit
5. Sharpen plane blade
6. Sharpen chisel blade
7. Sharpen auger bit
8. Clean, oil and store tools properly

SLO # 6

10 hrs.

1. Apply power tools safety rules
2. Adjust and operate portable circular saw
3. Cut circle and irregular lines with jig saw
4. Cut and rip wood with chain saw
5. Drill holes with electric drill
6. Operate power plane
7. Operate router
8. Operate electric sander
9. Operate radial arm saw
10. Operate table saw

11. Operate jointer
12. Clean and oil power tools and store them

SLO # 7

10 hrs.

1. Locate fractions of an inch on a rule
2. Measure distance between two points
3. Square corners using a framing square
4. Apply tables on a framing square
5. Layout and mark 45 degree angle with a framing square
6. Draw a straight line using a combination square
7. Plumb wall with a level
8. Apply leveling tools
9. Transfer level from one point to the next
10. Layout line with chalk line
11. Layout with 3-4-5 method

SLO # 8

6 hrs.

1. Cut lumber with a crosscut saw
2. Rip board with a rip saw
3. Identify different type of saw and apply their uses
4. Select a right size of hacksaw blade for a job
5. Sawing holes and irregular line with a coping saw and keyhole saw
6. Drive nail with hammer
7. Fasten board with screw and screw driver
8. Pull out nail with claw hammer
9. Apply ripping tools

TOTAL LAB HOURS

48 hrs

**Course Level Achievement
Form A**
(Used for shop courses as well as other program courses)
CT112 CONSTRUCTION SAFETY, TOOLS & EQUIPMENT

Student's Name (print): _____
Instructor's Name (Print): _____

Semester/Year: _____

Directions: Evaluate the student using the rating scale below and encircle the appropriate number to indicate the degree of competency. The numerical ratings of 5, 4, 3, 2, and 1 are not intended to represent the traditional school grading system of A, B, C, D, and F. The descriptions opposite the numbers will determine the level of student performance for each of the competencies listed below.

- Rating Scale:**
- 5 Excellent
 - 4 Above average
 - 3 Average
 - 2 Below average
 - 1 Unacceptable

COMPETENCY	RATING
1. Apply personal and work place safety.	5 4 3 2 1
2. Demonstrate proper use of hand tools.	5 4 3 2 1
3. Maintain hand tools.	5 4 3 2 1
4. Identify demonstrate proper us of power tools and shop equipments.	5 4 3 2 1
5. Maintain power tools and shop equipments.	5 4 3 2 1

I certify that the student has completed all the competencies in this program and has achieved ratings as shown under each respective competency.

Instructor's signature

Date

COMPETENCY # 1 Apply personal and workplace safety.

5. Demonstrate ability to perform all the required personal and workplace safety skills including wearing personal and workplace safety gears, follow personal and workplace safety precaution, apply tools and equipment safety, and observe materials and supplies hazards according to OSHA standards with 90 – 100% accuracy.
4. Demonstrate ability to perform all the required personal and workplace safety skills including wearing personal and workplace safety gears, follow personal and workplace safety precaution, apply tools and equipment safety, and observe materials and supplies hazards according to OSHA standards with 80 – 89% accuracy.
3. Demonstrate ability to perform all the required personal and workplace safety skills including wearing personal and workplace safety gears, follow personal and workplace safety precaution, apply tools and equipment safety, and observe materials and supplies hazards according to OSHA standards with 70 – 79% accuracy.
2. Demonstrate ability to perform all the required personal and workplace safety skills including wearing personal and workplace safety gears, follow personal and workplace safety precaution, apply tools and equipment safety, and observe materials and supplies hazards according to OSHA standards with 65 – 69% accuracy.
1. Demonstrate ability to perform all the required personal and workplace safety skills including wearing personal and workplace safety gears, follow personal and workplace safety precaution, apply tools and equipment safety, and observe materials and supplies hazards according to OSHA standards with bellow 65% accuracy.

COMPETENCY # 2 Demonstrate proper use of hand tools.

5. Demonstrate ability to perform all the skills required to properly use hand tools including tools selection, proper use and care, and safe usage according to tools specification and within the capacity requirement with 90 – 100% accuracy.
4. Demonstrate ability to perform all the skills required to properly use hand tools including tools selection, proper use and care, and safe usage according to tools specification and within the capacity requirement with 80 – 89% accuracy.
3. Demonstrate ability to perform all the skills required to properly use hand tools including tools selection, proper use and care, and safe usage according to tools specification and within the capacity requirement with 70 – 79% accuracy.
2. Demonstrate ability to perform all the skills required to properly use hand tools including tools selection, proper use and care, and safe usage according to tools specification and within the capacity requirement with 65 – 69% accuracy.
1. Demonstrate ability to perform all the skills required to properly use hand tools including tools selection, proper use and care, and safe usage according to tools specification and within the capacity requirement with bellow 65% accuracy.

COMPETENCY# 3 Maintain hand tools.

5. Demonstrate ability to perform all the skills required to properly maintain hand tools including tools conditioning, sharpening, adjustment and lubricating before and after use, and store according to tool specification and requirements with 90 – 100% accuracy.
4. Demonstrate ability to perform all the skills required to properly maintain hand tools including tools conditioning, sharpening, adjustment and lubricating before and after use, and store according to tool specification and requirements with 80 – 89% accuracy.
3. Demonstrate ability to perform all the skills required to properly maintain hand tools including tools conditioning, sharpening, adjustment and lubricating before and after use, and store according to tool specification and requirements with 70 – 79% accuracy.
2. Demonstrate ability to perform all the skills required to properly maintain hand tools including tools conditioning, sharpening, adjustment and lubricating before and after use, and store according to tool specification and requirements with 65 – 69% accuracy.
1. Demonstrate ability to perform all the skills required to properly maintain hand tools including tools conditioning, sharpening, adjustment and lubricating before and after use, and store according to tool specification and requirements with bellow 65% accuracy.

COMPETENCY # 4 Identify and demonstrate proper use of power tools and shop equipments.

5. Demonstrate ability to perform all the skills required to properly use power tools and shop equipments including tools selection, proper use and care, and safe usage according to tools specification and within the capacity requirement with 90 – 100% accuracy.
4. Demonstrate ability to perform all the skills required to properly use power tools and shop equipments including tools selection, proper use and care, and safe usage according to tools specification and within the capacity requirement with 80 – 89% accuracy.
3. Demonstrate ability to perform all the skills required to properly use power tools and shop equipments including tools selection, proper use and care, and safe usage according to tools specification and within the capacity requirement with 70 – 79% accuracy.
2. Demonstrate ability to perform all the skills required to properly use power tools and shop equipments including tools selection, proper use and care, and safe usage according to tools specification and within the capacity requirement with 65 – 69% accuracy.
1. Demonstrate ability to perform all the skills required to properly use power tools and shop equipments including power tools and shop equipment selection, proper use and care, and safe usage according to specification and within the capacity requirement with bellow 65% accuracy.

COMPETENCY # 5 Maintain power tools and shop equipments.

5. Demonstrate ability to perform all the skills required to properly maintain power tools and shop equipments including conditioning, adjustment and lubricating before and after use, and store according to tool specification and requirements with 90 – 100% accuracy.
4. Demonstrate ability to perform all the skills required properly maintain hand tools including tools conditioning, sharpening, adjustment and lubricating before and after use, and store according to tool specification and requirements with 80 – 89% accuracy.
3. Demonstrate ability to perform all the skills required properly maintain hand tools including tools conditioning, sharpening, adjustment and lubricating before and after use, and store according to tool specification and requirements with 70 – 79% accuracy.
2. Demonstrate ability to perform all the skills required properly maintain hand tools including tools conditioning, sharpening, adjustment and lubricating before and after use, and store according to tool specification and requirements with 65 – 69% accuracy.
1. Demonstrate ability to perform all the skills required properly maintain hand tools including tools conditioning, sharpening, adjustment and lubricating before and after use, and store according to tool specification and requirements with bellow 65% accuracy.