

COURSE: General Fabrication Methods

UNIT: 13 – Large Project Assembly

TOPIC: Assembling Large Projects

TIME: 5 – 10 hours

OBJECTIVES:

At the completion of this lesson, students will be able to:

- Identify materials to be used.
- Identify equipment to be used for project.
- Transfer information from technical drawing to work piece.
- Demonstrate correct operation of a circular saw.
- Explain the purpose of counterboring a hole for use of lag bolts.
- Utilize clamps to position work pieces during fastening operations.
- Compare and Contrast how lag bolts and carriage bolts work.
- Demonstrate how to install lag bolts and carriage bolts.
- Utilize nails to provide pressure for the gluing process.
- Evaluate accuracy of components and fit-up.

RESOURCES:

- Internet access
- Lesson Activity: Large Project Assembly Methods Activity (MOODLE)
- Worksheet: Large Project Assembly Methods Activity Worksheet
- Tools, Materials, and Equipment:
 1. Tape Measure
 2. Circular Saw
 3. Miter Saw
 4. Jig Saw
 5. Power Drill
 6. Speed Square
 7. Chalk Line
 8. Hammer
 9. 7/6” Socket and Ratchet

10. 7/16" Wrench
11. Bar Clamp
12. Compass
13. Marker
14. 80 grit Sand Paper
15. Three 2" x 4" x 8' Lumber (One per student)
16. 1/2" CDX Plywood (One per student)
17. 1/4" x 4" Carriage Bolts
18. 1/4" Washers, Lock Washers, and Nuts
19. 1/4" x 3" Lag Bolts
20. 8 Penny Nails
21. Wood Glue
22. 3/4" Spade Bit
23. 3/16" Twist Bit
24. 1/16" Twist Bit
25. Safety Glasses

STANDARDS:

Science:

Math: 4B

Technology: 2E, 2H, 11B, 12A, 19B, 19C, 19E

ABET: C, K

OUTLINE:

1. <Set Induction>
2. Worksheet
3. Activity

LEARNING EXPERIENCES:

1. <Set Induction> Have the tools, materials, and equipment out for students to look at and touch. Ask students what each of the tools and pieces of equipment are and what uses they serve. If available, show the final product to the students. Inform students of the objectives for the lesson.

2. Worksheet: Large Project Assembly Methods Activity Worksheet is available online. The worksheet works as a study guide for the quiz. It evaluates whether or not the student accessed the lesson activity online.
3. The online lesson activity entitled “Large Project Assembly Methods Activity” walks students through the process of making the project. It is important for students to preview the content before working on the project as computer access may be limited when the project is being worked on. **Encourage students to use their engineering notebooks to write the directions of the activity down in their own words.**

EVALUATION:

- Class participation
- Worksheet Completion
- Online Test
- Project Completion