

The STEM Academy

COURSE: General Fabrication Methods

UNIT: 6 – Cutting, Drilling, and Bonding Operations

TOPIC: Cutting, Drilling, and Bonding Materials

TIME: 5 – 8 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 band saw to cut curved pieces.
- Demonstrate correct procedure for drilling multiple holes.
- Utilize chemical fasteners to hold components in place.
- Assess the accuracy of the finish project.

RESOURCES:

- Internet access
- Lesson Activity: Pencil/Pen Holder Activity (MOODLE)
- Worksheet: Pencil/Pen Holder Activity Worksheet
- Tools, Materials, and Equipment:
 1. Band Saw
 2. Drill Press
 3. Combination Square
 4. Tape Measure
 5. Compass
 6. Self Locking Pliers
 7. Two Bar Clamps
 8. 30" x 9" x 1/4" Acrylic (One per student) – Cut down from 30" x 36" sheet
 9. 6" x 1/2" diameter acrylic dowel (One per student)
 10. 1/2" Twist Drill Bit
 11. Epoxy

12. Stir Sticks
13. Packing Tape
14. Masking Tape
15. Two Mixing Cups
16. 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: Pencil/Pen Holder 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 “Pencil/Pen Holder 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