

# Safety Information

Presented by FIRST Team 1741 Red  
Alert Robotics



# General Rules

- ▶ You **MUST** be wearing safety glasses **AT ALL TIMES**
- ▶ Pay attention to what you are doing
- ▶ No horseplay at robotics
- ▶ Use the guards unless a mentor gives you permission
- ▶ You must not wear baggy clothing or sweatshirts in the shop
- ▶ T-shirt and closed toe shoes only – no exceptions



# General Safety (2)

- ▶ No machinery usage without a mentor present
- ▶ Report all injuries to the safety captain immediately
- ▶ If something doesn't seem right with a machine tell a mentor before you start working
- ▶ Always use a push stick when ripping narrow stock



# General Safety(3)

- ▶ Lift with your knees, not your back
- ▶ Only operate machines that a mentor has shown you how to operate, not family members or friends



# Machines We Use

- ▶ Band Saw
  - Used for free hand cutting, one in both labs
- ▶ Table saw
  - Used to rip pieces to width
  - Ripping is cutting with the grain to change the width
- ▶ Chop Saw
  - Used for cross cutting, only saw that you move the blade with



# Machines cont.

- ▶ Stand-up Sander
  - Uses friction to remove sharp edges, one in both labs
- ▶ Drill Press
  - Puts a hole in desired materials
- ▶ Mill
  - Used to cut slots and shapes in metal
- ▶ Lathe
  - Rotates work piece and cuts to have perfectly circular cross-section



# Table Saw

- ▶ When using the table saw to rip, always use a miter gauge or a rip fence to guide the piece
- ▶ The blade should always be no more than 1 tooth over the material being cut
- ▶ Kickback is a major issue with power saws, you should never stand in the same direction as the blade rotates
- ▶ Do not let go of any material being cut while it is between the fence and blade while it is running



# Band Saw

- ▶ The blade guide should be no more than  $\frac{1}{4}$  inches over the stock being cut.
- ▶ Stop the machine and remove any small chips that lodge in the blade as soon as they are seen





# Drill press

- ▶ Always use a table board to protect the machine
- ▶ Clamps must be used to prevent the work piece from spinning
- ▶ Make sure that you have a mentor check the speed is correctly set before use



# Chop saw

- ▶ The saw has a silver lock pin on the back left of the machine that must be pulled out to use the saw.
- ▶ Never reach over the line of cut, it leads to a loss of fingers
- ▶ Only adjust the machine when it is off and not rotating
- ▶ When you cut, move the head all the way down and then back up to its starting position
- ▶ Only cut as fast as the saw can cut, not as fast as you can move it
- ▶ The kickback is behind the saw because of the direction of the blades rotation



# Mill

- ▶ Only use this machine with a mentor assisting you
- ▶ Only cut as fast as necessary on the mill in order to protect the mill bits
- ▶ There are 3 degrees of freedom on the mill, forwards and backwards, left and right, and up and down
- ▶ Always check the speed of the machine before use
- ▶ When clamping a piece on the mill, use spacers to protect the machine



# Lathe

- ▶ The lathe rotates the part being machined
- ▶ It cuts perfectly circular pieces
- ▶ Always check the speed of the machine before use
- ▶ Always remove the chuck key before turning on the machine

