FIREBIRD SAFETY PROCEDURE AND INFORMATION
2017

Firebirds Safety Policy

It is top priority that our team not only enjoy building and working with robots and the tools which are used, but that each and every girl on the team do so in the safest manner possible.

As a team member, you are responsible for not only executing safe practices at all times, whether in the shop, at competitions, or any other time, but also encouraging and ensuring that all those around you are adhering to safe procedures as well.

In order to be able to use any machine, you must have passed the general safety quiz and have been certified on the machine by a specified mentor (Dr. Entwistle/Mr. Palac/Coach Farrell/Mr. Rossman/Mr. Przydzial/ Mr. Charlton).

Any topic that is not addressed can be answered by the current Safety Captain or any mentor available.

General Safety Requirements

1. Always wear safety goggles when around tools, machinery, robots, in the pits, in the shop, or any place where goggles are required.
2. Wear closed-toed shoes at all times.
3. Wear gloves when handling the robot.
4. Never run when while in the pits, in the shop, or working with the robot.
5. When not using tools or machines remember to turn them off. NEVER leave unattended machinery on.
6. Before working on the robot, disable it, turn it off, and, if needed, remove the battery.
7. Open any and all vent valves when it is not needed or when pits/shop closes for the day/night.
8. Use gloves while lifting robot.
9. Use proper robot lifting routine (see passage *Robot Transportation*)

Electric and Tool Standards - in pits

1. NEVER "daisy chain" - plug power strips into other power strips
2. Do not leave heat generating tools unattended while plugged in/heating u.
3. Place heat generating tools away from any flammable or meltable objects or surfaces.
4. Unplug any heat generating tools and place in the designated or known area to cool down
5. Turn off robot before transportation.
6. Place any power drills on it's side to prevent falling drills.
7. Any tools that can be turned on easily/are on directly after plugging into a power source (i.e. Dremels, heat guns, hot glue guns) must be unplugged after use or while unattended.
8. Sharp tools are not to be left on open surfaces - must be put into tool box/"Clifford".
9. Use tools for intended purposes only (i.e. a wrench as a hammer; a screwdriver as a chisel)
10. If a tool is broken (or a drill bit is dull) inform a mentor as soon as possible so it can be replaced or fixed.
11. Wear gloves while using sharp tools and always direct strokes away from your body.
12. If you have any questions about tool safety, practice, or use, ask a mentor, pit boss, or safety captain before use or clean up.

Battery Safety

*Batteries contain acid (H_2SO_4) that will your eyes, skin, and clothing. <u>If in contact with the acid immediately go to a medical personnel (safety captain, mentor, or on-site medical personnel). Refer to Safety Data Sheet on how to deal with any chemical messes.</u>

1. If a battery is damaged or leaking acid, place into the damaged battery box and notify a mentor
2. If acid comes in contact with any surface, cover with baking soda (found in top compartment of first-aid kit) and use rubber gloves that are resistant to acid (also found in first-aid kit).
3. Remember to neutralize extra chemical matter on gloves with baking soda.
4. Flush any contacted area with water and seek medical treatment.
5. If a wire is stripped or broken place battery aside, make a note on or near battery, notify mentor. If applicable place battery into the damaged battery box.
6. If battery is leaking while at a FIRST event, report incident to Pit Admin.. Further instructions will be given from Event Management
7. Keep battery area clean, orderly, and DRY.
8. Wrap any exposed metal on battery with electrical tape, if you are not sure, check with safety captain, pit boss, or mentor.
9. Make sure to always inspect battery before placing into robot for any bends, cracks, dents, or tears.

IF YOU ARE EXPOSED TO ANY CHEMICALS CHECK THE SAFETY DATA SHEET FOR FURTHER INFORMATION ON CHEMICAL SAFETY (SDS) AND REACTIONS.

Eye, Face, and Body Protection

Always wear safety goggles

a. Certified goggles located in shop/pit
b. Goggles provided at competitions
c. FIRST certified guards for glasses

2. Safety goggles may not be heavily tinted
3. Wear gloves when handling hot objects, chemicals, or lifting/moving the robot.
4. Earplugs and headphones are available in the pit and in the shop for use when handling loud machinery or around loud commotion.
5. Closed-toe shoes are required and people will be turned away if they are not worn
6. Long hair MUST be tied back in a ponytail, braid, or bun. Hair ties are available in the first-aid kit.
7. Dangling jewelry (necklaces, bracelets, earrings, headbands) are not to be worn.
8. No loose clothing is allowed (this includes flowy pants, dresses, shirts, skirts, sweatshirt tassels, or any other clothing piece.
   a. The only exception is the Mount St. Joseph Acad. Spring Skirt may be worn at competitions. Shorts or pants must be worn underneath so, if removal is necessary to work on robot, it is possible.
9. *These rules follow for visitors as well.*

Robot Transportation

1. Robot should always be securely placed onto cart while moving to and from.
2. When not in use, cart must stay in the pit.
3. Loose objects should not be left on bottom of carts while moving.
4. One girl should be pushing from the back while another must be at the front guiding the way
    a. Also recommended that another girl walks along the side of the robot
5. Remember before transporting:
    a. All parts should be in a resting position
    b. Power off robot
    c. No hands are on the robot (Pit girls working or changing things on robot)
6. Lifting should include 2-4 people.
7. Make sure you know where you and your fellow lifter are planning to go.
8. Count down from three before lifting, but make sure that the other lifter is ready.
9. Use handles attached to frame.
10. NEVER lift by the bumpers.
11. Lift using the knees to prevent current or future injuries.
    a. If you are unsure how to do so, please talk to safety captain to have a quick lesson.
        i. Keep back straight
        ii. Do not twist your body
        iii. Bend your knees and get a good grip
        iv. Tighten stomach muscles and lift up
        v. Keep robot close to body and coordinate speed with others
12. Use gloves when lifting the robot.
13. Notify people around you that you are lifting the robot
14. Have a girl push cart under the robot to make travel smoother and quicker.
15. While walking through the pits have someone tell crowds that they are coming through either by saying “excuse me” or, simply, “robot”
16. Before leaving the field with the robot remove any field objects that may still be loaded in and relieve all stored energy.

Pit Safety

1. Use gloves to carry in materials.
2. Set up tent first to make allow most room for moving around.
3. Do not climb on unstable objects, use a ladder.
4. Keep heavy, bulky items close to the ground
5. Keep heights below 10 ft.
6. Keep flow of people to a minimum, only the necessary people should come in and out.

7. Do not Daisy-Chain
8. Keep work area clean
    a. Put away any materials used and clean up after others if they fail to do so
9. Keep aisle outside pit clear to allow others to move freely.
10. Follow any eye, face, and body safety rules while in the pit.
11. Banners and signs must be secured safely.
12. Stay within your allotted space.
13. At the end of the day, any and all tools should go back to its designated positions.
14. The pit should always be cleaned and swept by closing time.

In Pit Essentials

1. First-aid kit
    a. *keep tissues and cough drops during competition season due to many colds*
    b. Include everything from bandages to baking soda
2. Fire extinguisher
3. Trash bags
4. Safety Goggle Cleaner
5. Safety Manual
    a. Firebird and FIRST
    b. Mentor and Student handouts

In Case of Emergency

1. Meet in designated area in case of evacuation or fire drill
2. Always travel with a buddy
3. Do not leave without informing a mentor
4. Inform Pit Admin. if something is wrong or there is an emergency
    a. They can and will answer any questions

REMEMBER IF YOU ARE UNSURE OR DON'T KNOW SOMETHING PLEASE FIND THE HEAD SAFETY CAPTAIN, THEY ARE ALWAYS WILLING TO TALK ABOUT PROPER SAFETY WITH YOU. IT'S BETTER TO BE SAFE THAN SORRY.

STUDENT LESSON AND QUIZ -

1. **All student run with help of the mentors.**
2. **2-3 day lessons.**
3. **Alongside an in-shop day where the girls break down how to use different tools and machines.**
4. **Quiz must be passed with 100%, if anything less the student is responsible to meet with a girl another time and retake the quiz.**
5. **If quiz is not passed they are not allowed into designated shop areas.**

Essential Safety Regulations

- **Safety goggles** must be worn in the workshop areas, where there is a possibility of the exposure to flying objects, harmful chemicals, etc., when in competition pit areas, and any other area designated as a safety goggle zone. Everyday glasses are not a suitable form of eye protection; wear either side guards on eyeglasses or goggles designed to be worn over glasses.

- No **power tools** unless there is a mentor present.

- Use proper **gloves and hand protection** when handling anything hazardous, sharp, hot, or prone to transferring splinters.

- When in the workshop, at competitions, or at any event involving robots or other possible mechanical, electrical, or chemical hazards, **closed toed shoes** are required.

- **Hair** must be **tied back** when working near the robot or any other moving or rotary machinery.

- **Avoid loose clothing** when working with or around any robot or other moving or rotary machinery.

- **Be aware** of the location of safety points– emergency eye wash, first aid kit, fire extinguisher, etc.

- Always abide by the **rule of 3**: there must always be at least 3 people in the shop; 2 girls 1 mentor.

Proper Workshop Behavior

- Do not use any machine on which you are not certified.
- Do not use any machine or tool if you have not yet passed the safety quiz.
- Always walk in a thoughtful and controlled manner.
- Have a safe composure when in the workshop area and avoid roughhousing.
- Always be aware of your surroundings– above, around, and below.
- Keep a clean environment free of clutter and loose hardware.
- Notify others in a polite manner if carrying a robot, moving a heavy object, or handling any other large or hazardous.
- When in doubt, ask a mentor and/or an experienced Firebird.

Common Tools and Machines

Tool/Machine Name Tool/ Machine

Hammer	
Screw Driver	
Solder Iron	
Drill	

Dike Pliers	
Wire Strippers	
Drop Saw (Horizontal Band Saw)	

Band Saw	
Drill Press	
Circle Saw	

General Safety Quiz

1. When should safety goggles be worn?
    a. Only when a mentor instructs you to do so
    b. When I am in the workshop area, competition pit area, or around anything that could be hazardous
    c. When I am in the workshop area and if I want to at competitions
    d. When I am working on the robot
2. Which attire is best for working in the shop or in the competition pit?
    a. A fringy dress, loose hair, and 3 necklaces
    b. Ponytail, a sweatshirt without dangling hood strings, and sneakers
    c. Ponytail, a sweatshirt without dangling hood strings, and whatever shoes available
3. If the robot in the workshop is turned off, safety goggles are not necessary.
    a. True
    b. False
4. If someone has never used a certain machine before, is it okay for them to use?
    a. If they have read the directions printed on the machine they'll probably be fine, so yes.
    b. If they think they can figure it out they should try their best.
    c. If no one is around it's a good idea to just read some directions and hope for the best.
    d. No. They must be certified on the machine so they know how to use it properly and safely.
5. If someone has a heat gun in their hand they should
    a. Run to the nearest table to set it down quickly.
    b. Make it known they have a hot item in their hands and walk it over to a table where they explicitly deem it too hot to touch.
    c. Put it back where it belongs and hope is doesn't melt anything.
    d. Run it under cool water
6. In order to use a drill or any other power tool or machine in the workshop, how many others should be in the shop with you?
    a. As long as I am over 18, no one else needs to be here.
    b. I really just need someone else to keep me company, but only 1 person.
    c. I need at least 2 <u>other</u> people, mentors or girls (at least 1 mentor).
    d. I need at least 3 mentors and 3 girls.

Mentor Machine Overview Outline - will be used to certify and teach students how to use various materials.

1. Explain how to use, do not demonstrate.
2. If a difficult tool, show example on how to use it.
    a. Explain how to turn on and off and what to do while in use.
3. Walk student through it.
    a. Turn on.
    b. How to use it
    c. When you should use extra safety materials or use guides
        i. (i.e. when cutting small or hot pieces on a bandsaw, you should use a vise-grip)
    d. Explain how to turn off
    e. What to do if material is hot
    f. What to do in an emergency
        i. If something may break or snap
        ii. What to do, how to react, where to go from there
            1. Step away, turn off machine, notify mentor
4. Repeat process for any and all machinery and tools.
5. Remember to notify the student (after certification) that they are now allowed to use the machinery or tool.