2023-2024
Safety Binder
The Fightin' Robotic Owls

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1. Introduction

Team 5401 prioritizes safety in our workplace. We encourage everyone to step up when witnessing unsafe behavior, because even our student leads are not immune to risks. We understand that in safety, there isn't a way to make everything completely safe, but through proper safety education and training, we do our best to make sure that everyone is as safe as possible. Through our culture, we've developed our three-pronged approach:

1. Documenting safety procedures
2. Ensuring that everyone, mentors and students, are well trained in these safety procedures
3. Verifying that these safety procedures are being followed.

We want to make our program the best that we can, since we can never be too safe. Our program is inspired by other FRC teams and the Occupational Health and Safety Administration (OSHA). To ensure that our team members are safe, we make sure that they are all assigned their own proper Personal Protection Equipment (PPE) such as gloves, safety glasses, and ear plugs. With the safety program we have developed, we've established a safe environment and a strong safety culture. On Team 5401,

"We give a HOOT about SAFETY!"

2.2023-2024 Team Leadership

2.1 Mentors

Andy Windhausen - CADD Mentor
Dan “Pop” Walker - Fabrication Mentor
Katherine Matveykina - Safety & Operations Mentor
Kathleen Seidman - Lead Safety Mentor & Assembly Mentor
Kevin McKay - Lead Program & CADD Mentor
Mac McLendon - Assembly Mentor
Natalie Ralston - Assembly Mentor
Steve Rosenberg Sr - Fabrication Mentor
Virginia McKay - Lead Operations & Safety Mentor
James Chi - Fabrication Mentor
Jimmy “James” Kane- Programming Mentor
Jen Hathaway - Mental Health Mentor

2.2 Student Leadership

Anthony Duffy - Program Manager
Keira Seidman - Chief Engineer
Vi Pollard - Chief Marketing and Operations Officer
Isabel Hennessey - Chief Outreach Coordinator
Ethan Zhao - Chief Safety Engineer

2.3 Safety Committee

Anthony Duffy - Program Manager
Ethan Zhao - Chief Safety Engineer
Kaitlyn Higgins - Safety Deputy & Assembly Lead
Justin Skwirz- Safety Deputy & Assembly Member
Vi Pollard - Chief Marketing and Operations Officer
Sean Hennessey - Fabrication Member
Micheal Kim - CADD Member
Daphne Gao - Assembly Member
Kaidin Tran - CADD member
Mary Endicter - Fabrication member
Kathleen Seidman - Lead Safety Mentor & Assembly Mentor
Katherine Matveykina - Safety & Operations Mentor
Virginia McKay - Lead Operations & Safety Mentor

3. Team Safety Responsibilities

3.1 Mentors

Mentors on the team are able to provide training on machines they know how to operate. They are also able to provide high-level safety leadership by overseeing students in the shop, lab, and pit and ensuring students are performing in a safe manner.

3.2 Safety Committee

The committee ensures that the team understands and applies FIRST's and our team's safety rules and protocols. The committee members can make recommendations for corrective actions in the event that a student shows repeated or intentional unsafe behavior. Ultimately, the committee makes decisions with help from student and mentor leadership to further ensure a safe working environment for members of Team 5401 and other students of Bensalem High School.

3.3 General Team

Every team member is responsible and accountable for their own safety, as well as the safety of those around them. **No matter who you are, if you witness ANYONE being unsafe in any fashion, you should call out their dangerous behavior.**

3.4 COVID-19

Team 5401 requires students and mentors to follow Pennsylvania's state guidelines regarding COVID-19. Anyone who displays symptoms of COVID-19 or has been exposed/diagnosed with COVID-19 is not allowed to attend meetings until the recommended quarantine is completed or they receive a negative test result. They are also required to alert a mentor so they can perform proper contact tracing within the team.

4. Team 5401 Safety Rules

1. While in either the shop or pit, everyone MUST have on safety glasses. Even if you aren't working on anything, you must be wearing safety glasses in those areas.
2. Always have a partner with you when working in the shop or pit and always make sure there is at least one mentor nearby in the shop, pit or lab.
3. Make sure you are in the proper frame of mind when working in the shop or pit. If you are tired, sick, or otherwise unwell, use your best judgment on whether or not you should be working in the shop or pit. When in doubt, just step back and let someone else do the task.
4. You should only be in the shop if you are working on or observing a task that requires equipment.
5. There is zero tolerance for off-topic and unsafe behavior! All unsafe behavior in the shop or pit will cause immediate dismissal from the area.
6. If you see something, say something. If you notice ANYONE practicing unsafe behavior in the shop or pit, report it to a mentor or captain immediately.
7. Make sure you are properly equipped to work in the shop. That means NO long sleeves, no hoodies (sleeves must be pulled up and strings must be tucked in), no jewelry, no open-toed shoes, and long hair must be pulled back in the pit or shop.
8. Be aware of your surroundings and know where your safety equipment is located. Know where the fire exits, fire extinguishers, first aid kit, eyewash station, and SDS are located.
9. Make sure you are properly trained on the tool or piece of equipment you are/will be using in the shop. Refer to the safety binder for the list of equipment trainers if you need to be trained on a piece of equipment before using it.
10. If you have any COVID-19 symptoms or have been exposed/diagnosed with COVID-19, you must alert a mentor and stay home during the quarantine period.
11. Violations of these rules will not be tolerated and a mentor or captain will take appropriate action based on the severity of the offense. Actions may include verbal warning, written warning, suspension, and/or expulsion.

    Each student is required to read and sign off on these rules at the start of every season.

5. Shop Safety

5.1 Shop Safety Procedures

Before working in the shop, students should be properly trained on the piece(s) of equipment they plan to use. They should know the hazards associated with the different types of tools in the shop and know the necessary safety precautions that must be taken.

Basic safety rules can help prevent hazards associated with the use of shop equipment:

1. Keep all tools in good condition with regular maintenance.
2. Use the right tool for the job.
3. Examine each tool for damage before use and do not use damaged tools.
4. Operate tools according to the manufacturer's instructions.
5. Provide and properly use the right PPE
6. If you don't know something, ASK!

If an unsafe situation is encountered, refer to Rule #6- If you see something, say something! Any unsafe shop conditions should be reported to a mentor or student lead immediately so corrective action can be taken and the event can be documented in the team's Safety Log (section 11). For unsafe conditions beyond the team's control, work with the teams' mentors rather than on your own for extra precaution.

5.2 Shop Safety Checklist

1. Know the safety rules in the shop manual.
2. Make sure you are wearing the proper PPE for the task being performed in the shop.
3. Make sure you are dressed properly for working in the shop. NO long sleeves, NO jewelry, NO open-toed shoes, NO hanging accessories, and hair MUST be pulled back.
4. Be aware of your surroundings and know where your safety equipment is located. Know where the fire exits, fire extinguishers, first aid kit, eyewash station, and Safety Data Sheets (SDS) are located.
5. Make sure you are in the proper frame of mind when working in the shop.
6. Limit distractions while working in the shop and make sure your cell phone is not on you when using shop equipment.
7. Clean up when you are done working in the shop or if you notice a mess that could potentially be unsafe or hazardous (these messes should be reported to a mentor or student lead before cleaning up to ensure it is safe).

8. Wash hands before/after using machinery to prevent the spread of germs.

6. Pit Safety

6.1 Pit Safety Procedures

Students should only be in the pit at the competition if they are a member of the pit team currently on duty or if they were asked to be in the pit by a mentor.

Basic safety rules can help prevent hazards associated with working in the pit at a competition:

1. Safety glasses must be worn at ALL TIMES.
2. Keep safety gloves on hand so they can be used when working on the robot if necessary.
3. Limit distractions while working in the pit.
4. Keep all work surfaces free from clutter.
5. NO food and NO open drinks in the pit.
6. Have a first aid kit and battery spill kit easily accessible in the pit.
7. Pay attention to announcements from Pit Admin.
8. No Daisy Chaining of any kind.
9. Follow the competition site's rules regarding COVID-19 and masks.

If an unsafe situation is encountered, refer to Rule #6 - If you see something, say something! Any unsafe shop conditions should be reported to a mentor or student lead immediately so corrective action can be taken which can be documented in the team's Safety Log. For unsafe conditions beyond the team's control, have a team member or mentor report the issue to Pit Admin.

6.2 Pit Safety Checklist

1. Be familiar with the FIRST Competition Safety Manual.
2. Make sure you are wearing the proper PPE for working in the Pit.
3. Make sure you are dressed properly for working in the pit. NO long sleeves, NO jewelry, closed toed shoes and hair MUST be pulled back.
4. Be aware of your surroundings. Know where the fire exits, fire extinguishers, first aid kit, eyewash station, and SDS are located.
5. Make sure all tools are put away in an organized and safe manner.
6. Limit the number of people in the pit to the Pit Team on duty and any needed mentors.

7. Basic First Aid

7.1 Scrapes and Cuts

1. Wash your hands to avoid infection
2. Stop the bleeding
    a. Minor cuts/scrapes will stop bleeding on their own
    b. If needed, apply gentle pressure using a clean cloth or bandage
        i. Elevate wound until bleeding stops
3. Clean the wound by rinsing under water
    a. Wash AROUND wound with soap
4. Apply antibiotic or petroleum jelly
5. Cover the wound with a bandage, gauze, or paper tape
    a. If wound is minor, leave uncovered

7.2 Bruises

Use the **RICE** method for bruises

1. **R**est the bruised area
2. **I**ce the bruised area with an ice pack wrapped in a towel or paper towel leaving it on the area for 10 to 20 minutes
3. **C**ompress the bruised area if it is swelling
4. **E**levate the injured area

7.3 Foreign Body in the Eye

1. Wash your hands, a partner is recommended and have them wash their hands too
2. Get your partner to look at the affected area in the light
3. Pull back your eyelids and check in the mirror
4. Use a wet cloth to remove dirt from around eyes
5. Have your partner flush with sterile saline or emergency eye wash while you keep your eyes open

If object remains in eye **GET MEDICAL ATTENTION DO NOT RUB EYES**

7.4 Minor Cuts

1. Clean wound
2. Put Neosporin or antiseptic on cut
3. Bandage if necessary

7.5 Splinters

1. Wash hands
2. Provide good lighting
3. Another team member will have to use tweezers to grab the splinter as close to the skin as possible
4. Lift to remove splinter

   If the splinter head is poking out of breached region, grab a hold of the top
   If the splinter top breaks off, use a warm compress to draw it out of the skin before trying again with tweezers

7.6 Blisters

1. Wash the area
2. Sterilize a needle with rubbing alcohol and water
3. Make a small hole at the edge of the blister
4. Gently squeeze out the fluid
5. Wash the blister again and pat dry
6. Smooth down the skin flap
7. Apply antibiotic ointment
8. Cover the area loosely with a sterile bandage or gauze

7.7 Chemical Burns

1. Remove the cause of the burn
2. Flush the chemical burn off of the skin with cool running water for 10 minutes
3. Remove any clothing and jewelry that may be contaminated by the chemical
4. Bandage the burn
5. Flush again if needed

7.8 Serious Injuries Procedures

1. Designate someone to stay with the injured person
2. Instruct another person to call 911 or find an on-site paramedic
3. Let the medical professionals take over and do their job

ALL injuries regardless of their severity **MUST BE DOCUMENTED** on an Injury Report Form.

8. Emergency Procedures

8.1 Emergency Evacuation

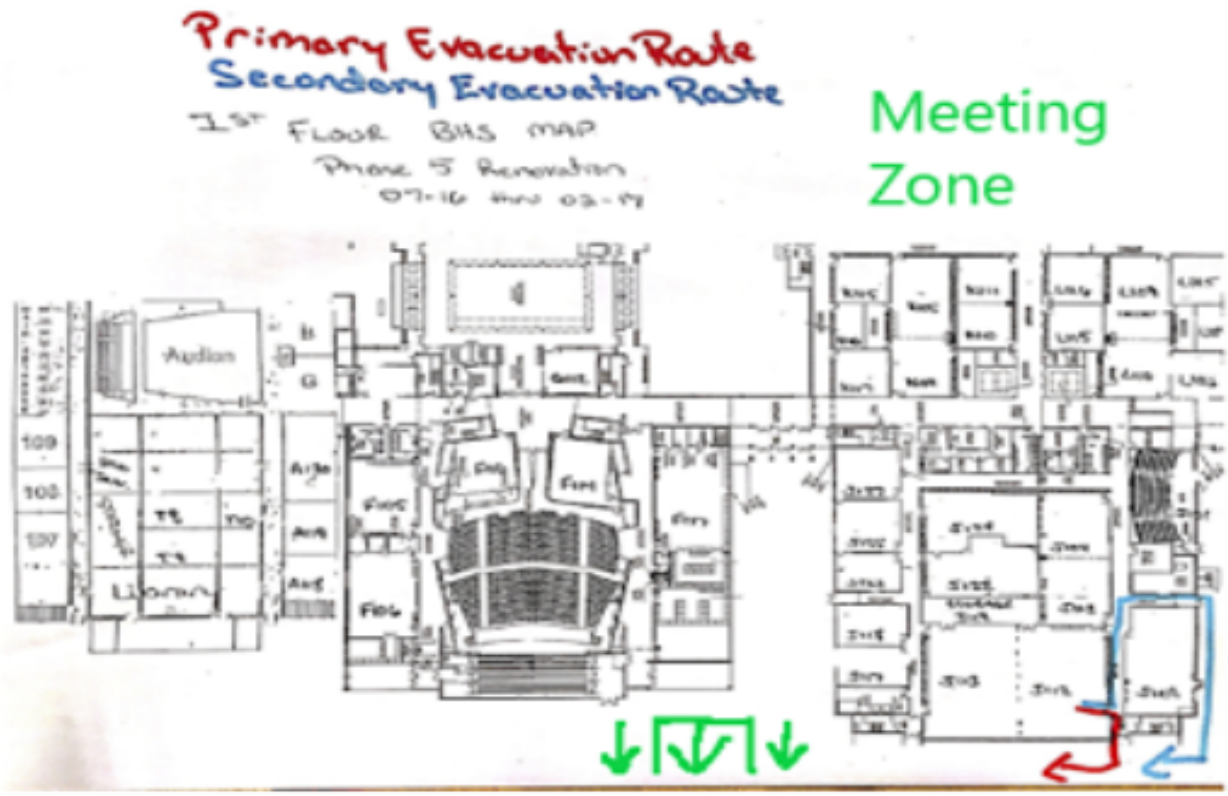
During the course of the season, anything can happen from winter weather, shop accidents, and fires. Team 5401 prepares our students for these emergency products. At the start of every season, we give a general safety presentation that outlines this. Maps of our workplace and evacuation routes are present around our workplace and provided by the school district. Before attending a competition, we go over that if there is an emergency, where our meeting location will be marked in the event of an accident.

8.2 Medical Information

In the event that a team member has a medical emergency or condition, whether that be a student or mentor, Kevin McKay and Virginia McKay have access to the portable file box. This file box contains the medical conditions of everyone. In the event a team member is in need of assistance, Kevin or Virginia can get the relevant information. This is in the event that a parent or legal guardian is not around and able to let the medical professionals know. At the beginning of the year, all members fill out an emergency card and turn it into the team. The team keeps a record of our members' emergency contacts and their medical conditions.

8.3 Emergency Maps

We are aware there's a choke point in the evacuation routes and have pointed it out to our school district's Facilities Department to fix.


Primary Evacuation Route
Secondary Evacuation Route
1st Floor BHS MAP
Phase 5 Renovation
Meeting Zone
Audion
Library

9. Shop Trainers

Before using any shop equipment, students must be properly trained on the equipment they will be using. Below is a list of the shop equipment used by Team 5401 and the corresponding trainer. In addition to the team trainers listed below, students can also be trained on this equipment by any of the Tech Ed Teachers at Bensalem High School. Once training has been completed, it needs to be documented in the training log.

Equipment	Trainer(s)
Wells Index Mill & Burke Powermatic Mill	Dan “Pop” Walker, James Chi, or Ethan Zhao
Lathe	Dan “Pop” Walker, James Chi, or Ethan Zhao
Drill Press	Dan “Pop” Walker, James Chi, or Ethan Zhao
Table Saw	Dan “Pop” Walker, James Chi, or Ethan Zhao
Miter Saw	Dan “Pop” Walker, James Chi, or Ethan Zhao
Power Sander	Dan “Pop” Walker, James Chi, or Ethan Zhao
Band Saw	Dan “Pop” Walker, James Chi, or Ethan Zhao
CNC Router	James Chi & Justin Skwirz

10. Training Logs

10.1 General Safety Training

Equipment/Training: Safety Binder & Battery Spill Kit & General Knowledge

Trainers(s): Ethan Zhao

Trainer's Role: Lead Safety Engineer

Team Member Name	Team Member Signature	Date of Training

10.2 Milling Machines

Equipment/Training: Milling Machine

Trainer(s): Ethan Zhao, Dan “Pop” Walker, James Chi

Trainer's Role: Fabrication Mentors and Chief Safety Engineer

Team Member Name	Team Member Signature	Date of Training

10.3 Lathe

Equipment/Training: Lathe
Trainer(s): Ethan Zhao, Dan “Pop” Walker, James Chi
Trainer's Role: Fabrication Mentors and Chief Safety Engineer

Team Member Name	Team Member Signature	Date of Training

10.4 Metal Chop Saw

Equipment/Training: Metal Chop Saw

Trainer(s): Ethan Zhao, Dan “Pop” Walker, James Chi

Trainer's Role: Fabrication Mentors and Chief Safety Engineer

Team Member Name	Team Member Signature	Date of Training

10.5 Jump Shear

Equipment/Training: Jump Shear

Trainer(s): Ethan Zhao, Dan “Pop” Walker, James Chi

Trainer's Role: Fabrication Mentors and Chief Safety Engineer

Team Member Name	Team Member Signature	Date of Training

10.6 Table Saw

Equipment/Training: Table Saw
Trainer(s): James Chi, Dan “Pop” Walker, Ethan Zhao
Trainer's Role: Fabrication Mentors and Chief Safety Engineer

Team Member Name	Team Member Signature	Date of Training

10.7 Miter Saw

Equipment/Training: Miter Saw
Trainer(s): James Chi, Dan “Pop” Walker, Ethan Zhao
Trainer's Role: Fabrication Mentors and Chief Safety Engineer

Team Member Name	Team Member Signature	Date of Training

10.8 Drill Press

Equipment/Training: Drill Press

Trainer(s): James Chi, Dan “Pop” Walker, Ethan Zhao

Trainer's Role: Fabrication Mentors and Chief Safety Engineer

Team Member Name	Team Member Signature	Date of Training

10.9 Band Saw

Equipment/Training: Band Saw

Trainer(s): James Chi, Dan “Pop” Walker, Ethan Zhao

Trainer's Role: Fabrication Mentors and Chief Safety Engineer

Team Member Name	Team Member Signature	Date of Training

10.10 CNC Router

Equipment/Training: CNC Router

Trainer(s): James Chi and Justin Skwirz

Trainer's Role: Fabrication Mentor and CNC lead

Team Member Name	Team Member Signature	Date of Training

11. Safety Log/ Injury Report Forms

Students and Mentors shall use this form to report all robotics-related injuries or "near miss" events (which could have caused an injury) – no matter how minor. This helps us to identify and correct hazards before they cause serious injuries. Completed forms are kept on file in the Safety Binder.

Your Name:
I am reporting an: ☐ Injury ☐Near Miss
What and where is the injury?
Coach/Mentor(s) on duty:
Have you told a Mentor/Coach or Captain about your injury/near miss?☐Yes☐No
Date of Injury/near miss: Time of injury/near miss:
Name of Witnesses (if any):
Where, exactly, did this happen?
What were you doing at the time?
Describe step by step what led up to the injury/near miss:
What could have been done to prevent this injury/near miss?
Who treated your injury?
Your Signature:
Coach/Mentor:
Safety Captain Signature:

This is a replica of OSHA's Form 300

12. CHAT Cards

In 2020, our team started distributing CHAT cards. These cards are supposed to be a reflection for students on the dangers of each machine/task and the associated precautions. Beginning with the 2024-2025 season, we plan to use our CHAT cards weekly. We will hand out these CHAT cards weekly to different sections of our team. Our main focus is to review all safety concerns associated with the task and identify how to minimize the risk before you begin the task.