

# TEAM 2506



## SAFETY MANUAL

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# **SABER ROBOTICS FRC TEAM 2506**

## **Team 2506 Saber Robotics Safety Manual**

**Safety is key, and Saber Robotics is doing everything in its power to become the most diversified FIRST robotics team in its safety observations and practices.**

**This manual applies to all construction, display set up, classroom use, machine use, and all other processes involving robot production, alterations, maintenance and services performed by all FIRST Team 2506 Saber Robotics members.**

**It is the goal of this manual to acquaint all team members with the proper safety practices and objectives provided by the leaders of the team's safety.**

**It is the responsibility of the Safety Captain and Team Leads to make all team members, student and mentors alike, knowledgeable of the safety requirements of Saber Robotics as well as other regulatory programs that may apply.**

**The importance of safety for all team members involved in the program should be recognized.**

**Accident Prevention shall be an integral part of every team activity.**

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# **GENERAL SAFETY RULES**

The rules that govern the team at all times

# SABER ROBOTICS FRC TEAM 2506

## TEAM 2506 SAFETY RULES

- 1.) All team members must recognize, appreciate, and respect team 2506's safety rules and regulations.
- 2.) All team members will wear P.P.E. (personal protective equipment) whenever necessary or appropriate.
- 3.) All team members must respect Team 2506 Safety Program, Safety Manual, and its enforcers.

### **The key objectives of Team 2506's Safety Program are:**

- 1.) Ensure that every participant, staff member, mentor, parent/legal guardian, visitor, and observer has a safe, enjoyable, and injury free preseason, build season, and competition season.
- 2.) Motivate team members and other teams to learn and follow safe group and individual practices as a life skill

### **Members of Team 2506 are required to:**

- 1.) Always listen and follow the **safety captain's** and **safety lead's** instructions and tips
- 2.) Perform and maintain **safe behaviors**
- 3.) Maintain a clean, organized, and safe physical condition of their working environment
- 4.) Always wear proper P.P.E. (personal protective equipment)

# **PERSONAL PROTECTIVE EQUIPMENT**

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## PERSONAL PROTECTIVE EQUIPMENT

All of the Safety Leadership is responsible for observing that proper protective equipment is being worn by every team member. It is the responsibility of the Safety Leaders to ensure that all team members are properly equipped and trained to use the appropriate personal protective equipment. It is the responsibility of all team members to remind each other on an individual and group basis if personal protective equipment regulations are ignored.

### Personal Protective Equipment Includes:

#### Appropriate Clothing:

When working or observing within fifty feet of a machine or tool, pants (defined as an item of clothing which covers the legs and ankles with each leg having a separate tubular piece) must be worn at all times.

When working or observing within fifty feet of a machine or tool, close-toed shoes (defined as an outer covering of the foot with a stiff sole) must be worn at all times. Open-toed shoes, Slippers, Flip-flops, Sandals, and high heeled shoes are not allowed. Steel-toed boots are a good idea, but are not required.

When working or observing within ten feet of a machine or tool, loose baggy clothing, hooded sweatshirts, and apparel with loose or dangling strings or cords are not permitted.

When working or observing within ten feet of a machine or tool, jewelry or any kind is not allowed unless approved by the Safety Captain. Specifically Jewelry, such as items located around the wrist, fingers, and neck, can pose a significant danger and have the potential to cause harm to the wearer and others locally. Studded earrings are an exception as long as they have been approved by the Safety Captain.

#### Eye Protection:

Safety Glasses with side shields meeting ANSI Z87.1 are required within fifty feet or within eyesight of a machine or tool and to be worn at all times.

Safety Glasses are considered “worn” when they are located in a position in which projectiles will not cause damage to the eye from most angles.

Prescription glasses meeting ANSI Z87.1 are required to be equipped with side shields in order to be defined as “safety glasses”.

Safety Glasses must have no added tinting to the lens which would result in a loss of eye contact between the wearer and others. Eye contact ensures that actions have been communicated and that the user is listening. Therefore only Clear and yellow tinted (as long as approved by the Safety Captain) safety glasses are allowed.

When gas welding and burning, burning goggles with plastic plates on both sides are required and must meet a No. 3 density rating or higher.

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## **Eye Protection Continued:**

Chemical splash goggles are required within 10 feet of exposed chemicals.

Safety Glasses are also required within fifteen (15) feet of any soldering, wire cutting, or work done involving providing power and electricity to electronics via wires.

## **Face Protection:**

Full face shields are required for all power chipping, grinding, and sawing.

Full face shields are required when handling molten plastic, metal, tar, caustics, and other molten materials.

## **Hearing Protection:**

In any area where noise levels exceed 80 dBA, hearing protection is required.

In any area where exposure of 75-79 dBA exceeds 8 hours a day.

Hearing protection is required within twenty (20) feet of any chop saw, reciprocating saw, and circular saw.

## **Foot Protection:**

Team members are required to wear close-toed shoes (defined as an outer covering of the foot with a stiff sole) within fifty (50) feet of any tool or machinery.

Open-toed shoes, Slippers, Flip-flops, Sandals, and high heeled shoes are not allowed.

Steel-toed boots are a good idea, but are not required.

## **Hand Protection:**

Plastic or rubber gloves are required when handling solvents, acids, or chemically treated material.

Non-slip rubber or nylon gloves are required whenever lifting objects that are considered “bulky” or any object which exceeds twenty (20) pounds.

Latex gloves are required when working with an injured subject or when working with bodily fluids.

# **SAFETY MANAGEMENT AND ORGANIZATION**

The official safety officers responsibilities and ranking

# SABER ROBOTICS FRC TEAM 2506

## TEAM 2506 SAFETY HEIRARCHY AND RANKING

Team 2506 is known for going above and beyond the safety requirements of the FIRST program. In order to maintain and enforce those requirements, new safety rolls are continuously added to the team's structure. While all the teams are required to have a Safety Captain, Team 2506 has gone above and beyond, creating four additional safety rolls:

**SAFETY CAPTAIN** -During pre-season and build-season, this is the 'go to person' for safety. They are responsible for coordinating **safety training sessions** and ensuring that the entire team follows and understands the team safety rules. This person is also in charge of the other safety leads and keeps them organized.

During the competition, this person becomes the **pit safety manager**. He/she is in charge of safety practices, distribution of safety media, and promoting safety awareness to rookie teams and event onlookers. It is this person's responsibility to ensure that everyone is working in a safe and controlled environment, even in the heat of competition.

**TOOL MANAGER** -With a variety of tools and machinery being used to create and maintain the robot, it is important that there are no mishaps. To eliminate the chance of injury during robot build or repair, an additional position was created. The tool manager ensures that tools are being used safely and properly. If a tool is used in the wrong situation or with the wrong application, it has the potential to become a safety hazard. It is the tool manager's responsibility to inform other students and mentors about the proper use of each tool, machine, and robot function. It is also this person's responsibility to know where the tools are located and periodically organize tools that were perhaps left unattended or in the wrong location. This allows work environments, such as the pit area, to stay neat and organized, which increases efficiency when it comes time to make quick repairs or modifications to the robot.

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**LIFT COORDINATOR** -One of the most common mistakes a person can make is to lift an object improperly. It is the lift coordinator's duty to inform and educate people about the importance of using proper **body mechanics** when lifting and transporting heavy items.

At competitions the lift coordinator gains more responsibility. It is their job to make sure that the robot is safe to lift and what will be done to it once it is lifted. They are also in charge of informing surrounding people that the robot will be lifted and makes sure that the local traffic is not in danger. *(see Section 4 Lifting Objects and Coordinating Lifts)*

**BATTERY COORDINATOR** -At competitions it is important to keep pit areas safe. It is extremely important that batteries in particular are kept well organized and tidy. It is the battery coordinator's duty to know what batteries have been charged, which require charging, which battery will be used in the next match, and to properly label and sort the batteries. This person must rout wires neatly and periodically check that the leads remain securely attached to the battery. This person is also in charge of organizing the various power strips located in the pits and work areas. *(see Section 5 Battery and Power Rules)*

**ROBOT MANAGER** -With so little time provided between matches to fix the robot, the pits can often become unorganized and hectic. Some members might be trying to fix one component while others are attempting to test another. It is this person's responsibility to maintain organization and communication in the area the robot occupies. It is their job to make sure everyone knows when the robot is on and is at a safe distance away from the robot and is only working on the robot in a safe manor at the appropriate times. This person is also the go to person for any robot related questions and inspection issues that may occur.

# **SAFE BEHAVIORS AND PRACTICES**

The general safety rules to be followed while at any team function or event

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### Safe Behaviors and Practices

*An unsafe situation can occur at any time. It is important to stay focused and maintain safe behaviors and positive attitudes towards safety. By eliminating possible hazards, a safe environment can be achieved.*

#### General Safety Rules:

- 1.) Use safe work practices
- 2.) Have a positive attitude towards safety, projects, team members, and tools
- 3.) Communicate ideas and actions thoroughly and accurately to nearby persons using three way communication.
- 4.) Discourage horseplay, especially in a working or hazardous environment
- 5.) Know the name, location, and proper usage of hand tools, power tools, machines, and guides.
- 6.) Use tools safely and properly and encourage others to do the same
- 7.) Be mindful of your actions, feelings, and attitude as well of those of others
- 8.) Think and plan ahead to avoid unsafe situations when transporting objects or moving materials in a working environment.
- 9.) Assist other teams and other team members with safety concerns or issues
- 10.) Request visitors and observers to follow these rules

#### Robot Repair Rules:

- 1.) Always wear proper PPE
- 2.) Have control over the robot at all times
- 3.) Communicate with everyone and inform them when the robot is on or about to move
- 4.) Never work on the robot when it is powered on or activated
- 5.) Stay out of the path of the robot
- 6.) Stay out of the path of the robot's appendages
- 7.) Keep fingers, hair, tools, and wires out of gears, transmission boxes, wheels, sprockets, and out of the path of pneumatic devices, rotating devices, oscillating devices, chain, belts, and pinch points.
- 8.) Frequently check the robot for sharp edges and pinch points and ensure that they are properly labeled or remedied.

# **LIFTING OBJECTS AND COORDINATING LIFTS**

The rules that guide a safe lifting process to reduce personal injury and harm

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## Rules of Lifting:

- 1.) Always listen to the lift coordinator and do not attempt to move the robot or heavy object until they have given the command.
- 2.) Always plan ahead on what will be done with the robot or its carrier after it has been lifted.
- 3.) Always use proper body mechanics when lifting the robot or any heavy object.
- 4.) When lifting objects with hard or sharp edges, wearing gloves is required. This prevents many types of finger and hand damages from occurring.
- 5.) Estimate the weight of the object by tilting it up slowly. If it is hard to move, it is too heavy to lift. Find someone to assist you in your lift, or use a lifting aid.
- 6.) Keep the object you are lifting as close to your body as possible.
- 7.) Avoid twisting your back as you lift. Instead, move your feet to turn.
- 8.) Keep a firm footing and plan your route FIG. 2 to avoid tripping hazards
- 9.) When possible, attach handles and caster wheels to heavy or awkward objects. Objects with lifting handles and caster wheels can make the job easier and reduce the strain on your back.

## Proper body mechanics:

*“Lift with your legs, not with your back”. Keeping your back straight and placing the bend at the legs increases lift strength and reduces the chances of pulling back muscles. Failure to comply with this rule can result in long term injury. Do not lift as shown in figure labeled “Bad”. Do lift as shown in figure labeled “Good”.*

# Bad



# Good



# **BATTERY AND POWER RULES**

The rules that guide a spark free environment to reduce chances of electrocution and personal injury

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## **General Power Safety**

Safe practices involving power and batteries can help you avoid many serious injuries. Safe power procedures help avoid electrocution which can lead to serious injury and/or death. Taking good care of batteries avoids acid spills. It is important to know how to take care of all of your electrical equipment properly.

### **Tips:**

- 1.) Keep an eye out for electrical problems or symptoms of poor electrical management; dimming of lights, blown fuses, frequent circuit breaker trips, etc.
- 2.) When supplying additional light to an area, be sure to use light bulbs that are of the proper wattage for the fixture. Keep flammable objects away from the appliance. Degraded wires in and around the fixture can be a tell tale sign that the bulb wattage is too high.

## **Electrical Cables, Power Surge Protectors, Extension Cords**

- 1.) Only use products that meet current industrial safety standards and have a certification label from an independent testing lab (Electrical Testing Laboratories, Underwriters Laboratories Inc.).
- 2.) Inspect the underside of the casing and make certain that it is marked with the manufacture's name and testing lab.
- 3.) Only use electrical products that have grounded three pronged plugs, or polarized plugs with one blade slightly wider than the other, as this feature is known to reduce the risk of electrical shock.
- 4.) If using extension cords outside, ensure that it has been intended to be used outside and is properly safe guarded to prevent shock.
- 5.) Insert power prongs fully. No part of the prongs should be exposed when the cord is in use.
- 6.) Never cover any part of an extension cord with rugs or other objects that are not specifically designed to contain wires while in use. Covering the wires prevents heat from flowing away from the wires and has been known to cause fires.
- 7.) Do not plug too many devices into one power cord. Disperse power sources by plugging different devices into different power cords.

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- 8.) Make sure that cords do not hang loosely or dangle from shelves, counter tops, work benches, or table tops. The cord might come in contact with another metallic surface and increase risk of shock, or poses a tripping hazard if accidentally pulled down.
- 9.) If a cord feels hot to the touch, discontinue its use and dispose of it.
- 10.) Replace damaged, kinked, cracked, worn, and mangled cords with new, inspected, properly rated cords.
- 11.) Never assume that a power cord is electrically insulated and always use caution when in contact with a power cord.
- 12.) Be aware of the fact that electrocution can occur in other ways than by touching a power cord directly. Contacting a conductive material that is in contact with a power cord can also result in electrocution.

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## Battery and Power Rules:

- 1.) Know the location and path of all wires and power cords that carry electrical current.
- 2.) Have a set location for robot batteries and create an organized battery charging station.
- 3.) Keep batteries in the battery box while charging. This keeps them out of the way and eliminates tripping hazards.
- 4.) Keep a record of which batteries are charged and which are not. Use this chart when determining which battery to use on the robot during a competition.
- 5.) Insert plugs into a battery's connector after the battery is fully charged. The battery plug serves as a flag to easily show which batteries are charged and stops any electrical leaks that can sometimes occur when a battery has remained off of a charger for a long period of time. It also prevents from unwanted contact and discharge of the battery. When it is ready to be used, simply pull the plug out of the connector before installing the charged battery into the robot.
- 6.) Keep unused battery plugs near the battery chargers
- 7.) Frequently inspect the batteries to check for loose connections at the battery posts and at the connector. Loose connections on battery lead wires lose *FIRST* matches and present an electrical danger to those handling the robot.
- 8.) Make sure everyone carries the battery by the base and sides and are not carrying them by the lead wires or wire connectors. Carrying the battery improperly can result in loose connections.
- 9.) Keep the battery chargers retracted in their cubby. Only slide them out to view the status of the battery charge. Leaving them pulled out and exposed can create an obstruction and increase chances of accidental injury. (see figure 1.)

Figure 1.



# **THE WORK ENVIORNMENT**

The rules governing the safety practices used in  
**The Metal Shop and The Wood Shop**

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# **THE METAL SHOP**

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## The Metal Shop

The metal shop is an environment in which tools and machinery capable of fabricating and machining metal are operated and utilized. It is important to keep this atmosphere work-friendly in order to ensure maximum quality and time efficiency.

### Tools of the metal shop:

Band saw	Drill Press	Pedestal grinder	Milling machine
Surface grinder	Lathe	Abrasive chop saw	Hydraulic press
Oxy-Acetylene torch	Plasma cutter	Welder (Mig, Tig & Stick)	Iron Worker
Foot shear	Box & Pan Brake	Hem bender	Portable drill
Assorted sheet metal forming tools		Portable circular saw	Reciprocating saw

### Lockout/Tag Out Procedures:

All machines and equipment must be isolated from any potential hazards. Therefore, they must be tagged out to inform other members that the machine or tool should not be in use. The machine should also be locked out to prevent unexpected energization or start-up or a release of stored energy which could result in injury. Locking and tagging out also informs the service or maintenance crew that the machine is down and needs to be fixed.

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## The Ban Saw

Useage:

- Rough cutting of materials

Safety Rules:

- Eye Protection
- No loose clothing
- Do not place hands within 3 inches



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## The Drill Press

Useage:

- Drilling holes in stock

Safety Rules:

- No loose clothing
- Eye protection
- Do not place hands under bit



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## Pedestal Grinder

Useage:

- Rough grinding of materials

Safety Rules:

- No loose clothing
- Eye protection
- Keep safety sheilds down while in use
- Be aware of flying sparks
- Do not use for aluminum



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## Milling Machine

Usage:

- Fine cutting of material

Safety Rules:

- Eye glasses
- No loose clothing
- Use magnetic shield
- No climb milling
- Lubricate often
- One man machine
  - One for x-axis and one for y-axis



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## Belt Disk Grinder

Usage:

- 

Safety Rules:

- Eye protection
- No loose clothing
- Keep fingers away from spinning parts
- Make sure you have tight grip
  - Vice grips
  - Water





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## Abrasive Chop Saw

Usage:

- Uses friction to cut metal

Safety Rules:

- No loose clothing
- Eye protection
- Beware flying sparks



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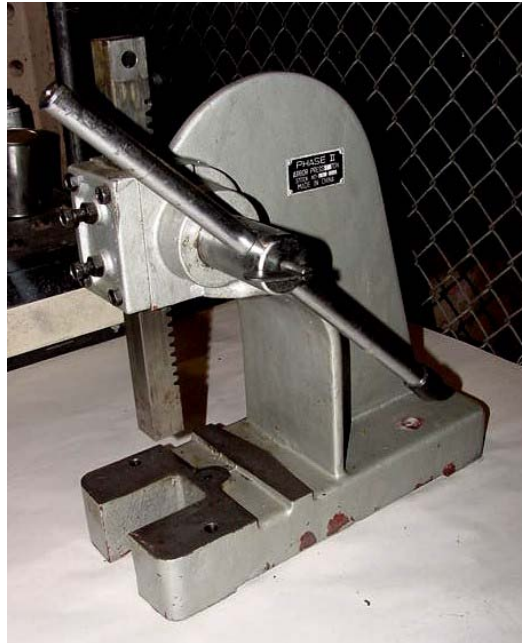
## Hydraulic Press / Arbor Press

Usage:

- Riveting
- Installing Bearings
- Other Press Fit Work

Safety Rules:

- Eye protection
- No loose clothing
- Keep hands clear



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## Oxy-Acetylene Torch

Usage:

- Heating metal to make malleable

Safety Rules:

- No loose clothing
- Eye protection
- Never over 5 PSI
- Wear shop coat and gloves
- Supervisor needed before use



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## Plasma Cutter

Usage:

- Cut metals using plasma torch

Safety Rules:

- Eye Protection
- No loose Clothing
- $\frac{3}{4}$ " or less
- Always adjust to lower ambridge
- Keep hands clear
- Supervision is required
- Know that metal is clean and know what your cutting



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## Welder (Mig, Tig and Stick)

Usage:

- Welding stuff

Safety Rules:

- Eye protection
- No loose clothing
- Lenses filter of at least 8
- Supervision is required
- Flame resistant clothing



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## Iron Worker

Usage:

- Cuts and bends sheet metal

Safety Rules:

- Eye protection
- No loose clothing
- Don't use unless metal is thick
- Supervision is required



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## Foot Shear

Usage:

- Cut sheet metal

Safety Rules:

- Eye Protection
- No loose clothing
- Watch hands
- Not expected to use
- Be careful of sharp edges on sheet metal



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## Box and Pan Brake

Usage:

- Bend sheet metal

Safety Rules:

- Eye Protection
- No loose clothing
- Supervision required
- Keep fingers clear
- Check angles
- Be careful of sharp edges on sheet metal



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## Pinch Plate Rolling Machine

Usage:

- Roll/curl sheet metal

Safety Rules:

- Eye protection
- No loose clothing
- Be careful of edges on sheet metal



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## Assorted Sheet Metal

Usage:

- Making stuff

Safety Rules:

- Clean up after self
- Beware of sharp edges



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## Portable Drill

Usage:

- Boring holes in materials
- Power screwing

Safety Rules:

- Eye protection
- No loose Clothing



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## Portable Circular Saw

Usage:

- Cutting materials (straight lines)

Safety Rules:

- Eye protection
- No loose clothing
- Keep hands clear
- Keep materials level



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## Reciprocating Saw

Usage:

- Cutting materials (curves)

Safety Rules:

- No loose clothing
- Eye protection
- Keep fingers clear
- Be aware of others and your surroundings



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# **THE WOOD SHOP**

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## The Wood Shop

The Wood shop is an environment in which tools and machinery capable of joining and cutting wood are operated and utilized. It is important to keep this atmosphere work-friendly in order to ensure maximum quality and time efficiency.

## Tools of the Wood Shop

Table saw	Radial arm saw	Router Table	Band Saw	Wide belt sander	Jointer
Thickness Planer	Disc/Belt sander	Drill press	Compound Miter Saw		CNC Router

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## Table Saw

Usage:

- Cutting wood

Safety Rules:

- No loose clothing
- Eye protection
- Do not leave blade projecting while not in use
- Keep fingers away from blade



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## Radial Arm Saw

Usage:

- Cutting long stock to size

Safety Rules:

- No loose clothing
- Eye protection
- Keep fingers away from blade
- Avoid feeding material too fast



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## Router Table

Usage:

- Round/hollow out wood materials

Safety Rules:

- No loose clothing
- Eye protection
- Keep fingers clear of bit



# SABER ROBOTICS FRC TEAM 2506

## Band Saw

Usage:

- Cutting wood material

Safety Rules:

- No loose clothing
- Eye protection
- Keep fingers clear of the blade



# SABER ROBOTICS FRC TEAM 2506

## Wide Belt Sander

Usage:

- Sanding/smoothing wood materials

Safety Rules:

- No loose clothing
- Eye protection
- Do not touch belt while in motion



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## Jointer

Usage:

- Producing a flat surface on wood materials

Safety Rules:

- No loose clothing
- Eye protection
- Keep hands clear of cutting head



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## Thickness Planer

Usage:

- Evens thickness of boards along their length

Safety Rules:

- No loose clothing
- Eye protection
- Keep hands out of interior machine
- Feed wood in the proper direction



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## Disc/Belt Sander

Usage:

- Sand/smooth and shape wood materials

Safety Rules:

- No loose clothing
- Eye protection
- Do not touch disc while in motion
- Be aware of sawdust



# SABER ROBOTICS FRC TEAM 2506

## Drill Press

Usage:

- Bore holes in wood

Safety Rules:

- No loose clothing
- Eye protection
- Keep clear of bit while in motion



# SABER ROBOTICS FRC TEAM 2506

## Compound Miter Saw

Usage:

- Cross cuts and miter joint cuts in wood

Safety Rules:

- No loose clothing
- Eye protection
- Keep fingers clear of blade



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## CNC Router

Usage:

- Computer controlled boring, shaping, and hollowing wood materials

Safety Rules:

- No loose clothing
- Eye protection
- Keep hands clear of bit while in use



# **SABER ROBOTICS FRC TEAM 2506**

## **THE PITS**

The pit area is the 10 ft x 10 ft space that F.I.R.S.T. provides the team to fix their robot in. To ensure maximum safety and efficiency is acquired, certain rules and requirements are in place. A pit must have a positive and comfortable atmosphere to eliminate as many stressful conditions as possible.

A proper pit should include: Multi-positional lights A Fan or similar air movement device  
An organized tool box An organized parts bin container An inviting marketing display

# **MARKETING DISPLAYS**

The rules that guide the assembly and use of the various visual demonstrations that promote F.I.R.S.T.

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## Setting up Marketing Displays

### Setting up an indoor, non hand held display:

- 1.) Ensure that the display does not block emergency exits, limit evacuation efficiency, and that it creates a safe and enjoyable working atmosphere.
- 2.) Verify that the display is stable on its own.
- 3.) Anchor the display to the floor or attach it to a wall or support structure using appropriate hardware whenever possible.
- 4.) Shelving and display edges should have no sharp corners or edges and must be rated to support the amount of weight intended for them.
- 5.) Place objects, particularly heavy objects, as far back as possible from the front end and that they are properly secured.
- 6.) Place electrical cords in a safe and organized manner so that they will not cause tripping hazards, be accidentally snagged, and that they are out of the reach of children.
- 7.) If leaving the display unattended, remove items that might tempt children to climb or tamper with the display.
- 8.) Only place items on the shelves if they are properly sized and are under the weight limit of the shelf. Items should be safe and secure and not look out of place.
- 9.) Make sure the display follows all rules under power and battery rules and that all flammable or combustible items are not in contact or close range of hot devices.

### Setting up an outdoor display

- 1.) Keep all objects (banners, masts, poles, ladders, tools, flags, robots, vehicles) at a reasonable distance away from power lines at all times.
- 2.) Never assume that an overhead power line, power cable, or extension cord is electrically insulated. It is safer to assume that coming in contact with any power carrying device could be lethal.
- 3.) Properly ground all metallic poles, masts, and support structures in accordance with electrical codes.

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## Ladder Safety

### When Using a Ladder:

- 1.) Ensure that the weight that the ladder is supporting does not exceed the maximum load rating.
- 2.) There should be only one person on the ladder at one time.
- 3.) Use a ladder that is the proper length for the job.
- 4.) The ladder should extend three (3) feet above a work surface if the ladder is used as an access point.
- 5.) The top two or three steps of the ladder should not be supporting weight.
- 6.) Ladders that extend or are straight should be set up about 70 degrees in comparison to horizontal.
- 7.) Ensure the ladder is locked and that all the locks are engaged before using it.
- 8.) Do not place the ladder in front of an unlocked, unblocked, or unguarded door.
- 9.) If it is a metal ladder, be sure it has slip resistant pads over the steps.
- 10.) If working near electrical equipment, high voltage boxes, or power lines, do not use a metal ladder. Metal ladders can conduct electricity.
- 11.) Never set up a ladder such that it may contact a live electrical wire, no matter what material the ladder is composed of.
- 12.) If using a ladder on unsteady, soft, or unlevel ground, have another person hold the bottom of the ladder while it is in use. If another person cannot be found, large, secured, flat wood planks placed under the feet of the ladder can add stability.
- 13.) Keep your body centered between the ladder's rails at all times. Never lean too far to the side while working.
- 14.) Never use a ladder for a purpose in which it was not intended.
- 15.) Never step on the top two steps, the bucket shelf, or attempt to climb, stand, or otherwise support your weight on the rear section of a stepladder.
- 16.) Never leave a raised ladder unattended.
- 17.) Always follow and recognize warning labels on the ladder.
- 18.) While ascending or descending a ladder, maintain three points of contact.
- 19.) Only one person is allowed on a ladder unless "two man" stepladders are in use.
- 20.) Always face the ladder. A full body safety harness is required if it is necessary to work backwards from a ladder.

# Emergency Procedures

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## Battery Spill

1. DO NOT TOUCH THE ACID! IT IS CORROSIVE AND VERY DANGEROUS!
2. Tell a mentor or the safety captain
3. Whoever cleans it up needs to be sure to wear rubber gloves
4. Neutralize the battery acid with baking soda

## Fire

1. All extra people should evacuate the area immediately
  - a. Only a mentor or safety captain should be close enough to exterminate the fire
2. If possible, Use a CO<sub>2</sub> fire extinguisher, to put the fire out
  - a. If a fire extinguisher will not put out the fire, tell pit admin or local authorities
3. Disconnect the power source
4. After the fire is out, check for fire damage
5. Be careful because some objects that survive the fire may be hot

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## **For all Medical Emergencies, contact a team First Responder.**

Always ask the victim if they would like your assistance before assisting unless they are unconscious. If the victim is unconscious, you can assist them without their consent.

Always check the area that the victim is in to be sure that you or the victim will not be further injured.

Always use personal protective equipment to prevent disease transmission.

## **Minor Medical Emergencies**

1. Small Cuts
  - a. Clean the area and use a band-aid if necessary
  - b. Apply triple antibiotic ointment only if there is no chance of allergy
2. Bumps and Bruises
  - a. Stop working if necessary
  - b. Ice if necessary for no more than 15 minutes
3. Mild Burn
  - a. Remove source of heat
  - b. Run cool, NOT COLD, water over the burn
  - c. Dry gently and apply Aloe Vera if necessary
  - d. Take medicine to reduce pain
4. Stress
  - a. Relaxation Breathing
  - b. Muscle Relaxation
  - c. Imagination
  - d. Shoulder Shrugs and Squeezes
  - e. Exercise
  - f. Time Management
5. Strains, Sprains, Breaks
  - a. Rest
  - b. Splint
  - c. Ice for 15 minutes
  - d. Elevate injured area above heart level
  - e. Seek further medical advice
6. Conscious Choking
  - a. Give back blows
    - i. Lean the person forward.
    - ii. Place the heel of the hand on the person's back between the shoulder blades.
    - iii. Give 5 back blows.
  - b. Give abdominal thrusts
    - i. With one or two fingers of one hand, find the person's bellybutton.
    - ii. Make a fist with other hand and place the thumb side of your fist against the person right above your fingers at the bellybutton.

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- iii. Grasp your fist with your other hand.
- iv. Give 5 abdominal thrusts.
- c. Repeat step a., then step b. until the object is dislodged or the victim becomes unconscious.

## Major Medical Emergencies

1. Allergic Reaction
  - a. Contact local authorities and Pit Admin if at a FIRST event
  - b. Ask the person if they have known allergies
    - i. If they do, ask if they have an EpiPen<sup>®</sup>
      1. If they need assistance with the EpiPen<sup>®</sup>, contact a first responder
2. Shock
  - a. Symptoms of shock
    - i. Restlessness or irritability
    - ii. Altered consciousness (e.g., drowsy, confused or dazed, or passing out)
    - iii. Nausea (sick to the stomach)
    - iv. Pale or ashen (gray), cool, moist skin
    - v. Fast breathing
    - vi. Fast pulse
  - b. If shock is indicated, contact local authorities and Pit Admin if at a FIRST event
    - i. Have the person lie down, as this is often the most comfortable position
    - ii. Control any external bleeding
    - iii. Calm and reassure the person
    - iv. Raise the person's legs about 12 inches unless you suspect head, neck or back injuries, or a broken hip or leg
    - v. Help the person maintain a normal body temperature; if the person is cold, cover him or her with a blanket or warm clothing
    - vi. Do not give the person anything to eat or drink, even though he or she may be thirsty
  - c. Keep the person warm
  - d. Try and keep them calm and awake
  - e. Seek the source of shock
3. Heart Attack/Stroke
  - a. Check for signs of a heart attack
    - i. Chest pain or discomfort lasting more than 3-5 minutes or that goes away and comes back
      1. Pain is not relieved by rest, changing position or medication
      2. May spread to shoulder, arm, back, stomach, neck or jaw
    - ii. Trouble breathing
      1. Breathing is often faster than normal
      2. Person feels short of breath
    - iii. Nausea
    - iv. Sweating or changes in skin appearance
    - v. Dizziness or unconsciousness

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- vi. May complain of heartburn or indigestion
  - vii. Denial that anything serious is wrong
  - b. If heart attack is indicated, contact local authorities and Pit Admin if at a FIRST event
    - i. Convince the person to stop activity and rest
    - ii. Try to obtain additional information about the person's condition
    - iii. Comfort the person
    - iv. Assist with medication, if prescribed
    - v. Monitor the person's condition
    - vi. Be prepared to give CPR and to use an AED
  - c. Check for signs of a stroke
    - i. Sudden body weakness or numbness, often on one side
    - ii. Sudden facial drooping or weakness on one side of the face
    - iii. Trouble speaking or being understood when speaking
    - iv. Trouble seeing in one or both eyes
    - v. Sudden severe headache
    - vi. Dizziness, loss of balance
    - vii. Looking or feeling ill, abnormal behavior or confusion
  - d. If stroke is indicated, contact local authorities and Pit Admin if at a FIRST event
    - i. If there is fluid or vomit in an unconscious person's mouth, position him or her on one side to allow any fluid to drain out of the mouth. (You may need to remove material from the person's mouth.)
    - ii. If the person is conscious, offer comfort and reassurance.
    - iii. Have the person rest in a comfortable position.
    - iv. Do not give the person anything to eat or drink.
    - v. Care for the specific conditions you find.
4. Severe Bleeding
- a. Follow standard precautions to prevent disease transmission (such as wearing non-latex disposable gloves and other personal protective equipment such as eyewear or masks, if available)
  - b. Cover the wound with a dressing and press firmly against the wound (this is called direct pressure) until the bleeding stops.
  - c. Secure the dressing with a roller bandage. Tie knot directly over the wound.
  - d. Check the fingers (or toes) for feeling, warmth and color to make sure the bandage is not too tight.
  - e. If bleeding does not stop, apply additional dressings and bandages and continue to apply direct pressure.
  - f. Contact local authorities and Pit Admin if at a FIRST event
  - g. Care for shock and continue to monitor the person until help arrives.
5. Moderate Burn
- a. Remove the source of heat.
  - b. Cool the burn.
  - c. Cover the burn loosely with a sterile dressing and care for shock.
  - d. Do not break blisters; loosely cover blisters with a sterile dressing.
  - e. For a serious burn, contact local authorities and Pit Admin if at a FIRST event
6. Poisoning
- a. Ingested Poison

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- i. Contact the Poison Control Center at 1-800-222-1222.
    - ii. If the person is unconscious, or there is a change in the level of consciousness, or if another life threatening injury is present, contact local authorities and Pit Admin if at a FIRST event.
  - b. Inhaled Poison
    - i. Move the victim to fresh air.
    - ii. Care for life threatening conditions.
    - iii. Monitor the victim's airway, breathing and circulation.
    - iv. If conscious, keep the victim comfortable.
  - c. Poisonous Plants
    - i. Remove exposed clothing and wash the exposed area thoroughly with soap and water as soon as possible after contact.
    - ii. If rash or wet blisters develop, advise the victim to see his or her health care professional.
    - iii. If the condition spreads to large areas of the body or face, have the victim seek medical attention.
7. Head, Neck, or Back Injury
  - a. Contact local authorities and Pit Admin if at a FIRST event
  - b. Do not move the victim unless further injury will occur.
  - c. Hold the victim's head and neck still.
  - d. If the victim is conscious, encourage them to remain calm and still.
8. Seizure
  - a. If the victim is known to have periodic seizures, there is no need to summon EMS.
  - b. You do need to summon EMS personnel if –
    - i. The seizure lasts more than 5 minutes.
    - ii. The victim has multiple seizures.
    - iii. The victim appears to be injured.
    - iv. The victim is pregnant.
    - v. The victim is a diabetic.
    - vi. The victim fails to regain consciousness.
    - vii. The seizure occurs in the water.
  - c. Remove any objects from near the victim so they cannot harm themselves.
  - d. When the seizure is over, check to be sure they have not injured themselves.
  - e. Stay with the victim until he or she is fully conscious and aware of his or her surroundings.



### Injury Report Form

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Time: \_\_\_\_\_

Address: \_\_\_\_\_ City: \_\_\_\_\_ State: \_\_\_ Zip: \_\_\_\_\_

Phone: \_\_\_\_\_ Age: \_\_\_\_\_ Location of incident: \_\_\_\_\_

Victim's statement of injury:

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Treating person's statement of injury:

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Medications:

---

Other illnesses or allergies:

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Treatment given:

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Recommendations:

Go to hospital:	YES	NO	
Go see a doctor:	YES	NO	IF WORSE

Released to:	Self	Team	Mentor	Parent	Doctor	Ambulance
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Time released: \_\_\_\_\_ Name(s) of person providing first aid: \_\_\_\_\_

Signature of person giving aid: \_\_\_\_\_

Signature of adult (if person giving aid is under 18): \_\_\_\_\_

# SABER ROBOTICS FRC TEAM 2506

## Safety Contract

Dear Parents / Guardians,

Your son or daughter has chosen to be involved in the Saber Robotics program at Franklin High School. This program is truly unique in that it allows the students to solve real problems and use real world practices that apply their classroom learning. In this program they are also mentored by men and women who are practicing the professions to which these students aspire on a daily basis. There truly is no experience quite like FIRST Robotics.

As part of this program many of your sons and daughters will be working with machinery and equipment that is not to be treated lightly. As a school our primary concern is for the health and well being of our students. In light of this we will be training the mentors to ensure that they are aware of the specific dangers of working in the metal shop and how to most effectively monitor the activities of students working in these environments. However, we recognize that nobody can be ware of all things at all times.

For this reason we are asking you to help build a culture of safety within our team and our shop facilities. We are asking you to discuss the importance of abiding by the following safety expectations for students:

- 1) Safety is the first factor to be considered in all activities.**
  - If ANY student or mentor believes an activity is unsafe they should ask that the activity cease and discuss the matter with the safety captain and or a mentor before the activity can resume.
- 2) There is to be no shop activity without the supervision of a safety trained adult.**
- 3) If you are unsure of what you are doing- don't.**
- 4) Don't be afraid to ask questions- of anyone- at anytime.**
- 5) Listen, and be listened to!!!**

Parents we are asking you to sign below. By doing so you are indicating that you are aware that your son or daughter may be working in a shop environment and with equipment that has the potential to cause bodily harm. You are also agreeing that you have discussed this with your student and that the student is willing to help enforce the expectations above.

It is our intent to create a safe environment. We believe the steps we have taken help to achieve that. We appreciate your support.

John Budish Jr.

Margaret Guderyon

Michael Dicks



Acknowledgement of Receipt and Support of Safety Expectations

By signing below we indicate that we have read, discussed and understand the safety expectations for FIRST Robotics Team 2506, Saber Robotics. As a student I further understand that it is my responsibility to help establish and maintain this culture of safety. As a parent I understand that every effort will be made to ensure a safe environment while working with power tools and heavy equipment. I further understand that some risk is involved and that despite every intention the possibility of accidental injury exists.

Printed Student Name: \_\_\_\_\_

Parent Signature \_\_\_\_\_ Date \_\_\_\_\_

Student Signature \_\_\_\_\_ Date \_\_\_\_\_