

Safety Manager Training

As we pursue the mission and vision of *FIRST*®, safety is a value everyone needs to embrace. Reinforcing a culture of safety is the responsibility of every individual in the *FIRST* community. As a Safety Manager, your role at the event is to help with event safety and to help guide team members as they learn to make safe decisions.

Team Experience

Help us create a positive climate at our *FIRST* events. It's important for all volunteers and staff to remember that we are all here to enable an exceptional team experience, and the teams are our "customers". Just as we would never raise our voice to a VIP or a guest speaker; we should treat team students, mentors, and supporters with the same amount of respect. Even in frustrating situations we always need to be kind, calm, and patient. As volunteers in our community, it's important to set the right example for everyone by maintaining our focus on team experience. For most *FIRST* students, their event experience may be defined by ten or so interactions with *FIRST* volunteers, one bad interaction will last in their memories. Let's make thousands of positive memories for all our participants and show them the value of *FIRST* and *Gracious Professionalism*® in action.

Safety Manager Responsibilities

- Monitor overall event safety, observe unsafe actions, and coach teams in appropriate safe behavior - **see below for tips on how to coach teams**
- Manage the daily Safety All Star - **see notes below!**
- Attend the daily morning volunteer meetings if asked (talk with your Volunteer Coordinator [VC] about scheduling)
- Wear the red safety vests to identify yourself to teams (ask your VC for these)
- Oversee safety from beginning to the end of the event, including Load-In and Load-Out
- Support the eye protection stations to ensure they are properly stocked with safety glasses and running efficiently
- Manage Safety Attendants and help keep volunteers engaged. (Work with your VC on site)
- Conduct Safety Captain meetings at event – **see notes below!**
- **NEVER** make up their own rules. If something seems unsafe and is not specifically called out in this document or supporting documentation, please talk to the Event Manager or Program Delivery Partner.

General Safety

- Teams should follow all of the rules from the Event Rules Section of the [Game Manual](#).
- Follow safe work practices, including safe use of all tools and personal protective equipment (PPE) – depending on the situation, this may include: safety glasses, shoes, gloves, hearing protection, etc. (more details below)
- Remind teams to be careful about using tools that generate heat to avoid injury or risk of fire.
- Running and horseplay is not permitted at any time.
- Children 12 and under must be always accompanied by a person 18 or older.
- If you see a team plugging a power strip into another power strip (also known as daisy chaining), talk with the team and encourage them to find another solution.
- You can read the [Safety Manual](#) for more details on safety practices.

Tools

- Small, bench-top machinery, with appropriate guards, is permitted in team pits. 'Small' machinery is machinery that can be easily lifted by one person. (i.e. small band saws, drill presses, etc.)
- Floor standing power tools are prohibited.
- Tools that throw sparks or produce open flames are prohibited.
- Teams should use tools safely and appropriately.
 - Speak with a team mentor if you see a team member using a tool in an inappropriate or dangerous manner. Assist to identify a more appropriate tool the team can use.
- Remind teams that when using knives/blades, direct cutting strokes away from your hand and body and be aware of those around you. Wear cut resistant gloves and use safety razors with retractable safety blades.
- Soldering may be done using an electric iron/gun only.
- Do not leave hot tools where injury can occur.

Personal Protective Equipment (PPE)

- At *FIRST* events, eye protection must be worn:
 - Anywhere in the pits including walkways.
 - In the vicinity of the arena, including the playing field.
 - On the practice field.
 - Any area posted with signs requiring the use of eye protection (such as the machine shop).
- Events are responsible for providing safety glasses at the venue. We recommend teams store their safety glasses in their pits overnight to ensure participants re-use the safety glasses they borrow to mitigate the risk of running out of safety glasses at events. Safety glasses will not be required at the *FIRST* Robotics Competition Pit entrance for the first ten minutes only. Teams should use this time to retrieve their safety glasses from their assigned pits. Once this allotted time has passed, volunteers and staff should begin reminding team members and visitors that eye protection is required and directing them to the safety glasses station.
- Hand protection is designed to protect against heat, electrical, chemical, and mechanical hazards. Proper gloves and mechanical tool guards should be used as applicable.
- Closed-toed shoes must be worn in a team's individual pit and by the field.
- If you see someone working on a robot with loose clothing, jewelry or long untied hair, remind them to pull back hair, tie back loose clothing, and/or remove loose items.

Battery Safety

- If a battery is visibly damaged in any way, the team should not use it. At a *FIRST* event if someone comes in contact with a leaking battery:
 - Immediately send the person in contact with acid to the First Aid Station/EMTs.
 - Report the incident to the Pit Administration Supervisor so that the individual can fill out a Medical Incident Report form. Provide the team number and available information.
 - Pit Administration will immediately contact Event Management for further instruction from event and venue authorities.

General Robot Safety

- Encourage team members to make sure those around them are aware when work is being done on the robot, or when the robot is being turned on or off

- Where possible, de-energize any mechanisms on the robot which store energy. Where this is not possible, teams should use a “remove before flight” type safety interlock to prevent these mechanisms from releasing energy unexpectedly. This can apply to mechanisms such as:
 - Opening the vent valve to released the compressed stored air in pneumatic mechanisms.
 - De-tensioning or de-compressing springs, gas-shock dampers or elastic tubing
 - Moving mechanisms to their lowest-energy state, such as lowering robot arms/devices that could drop unexpectedly
- Remind teams to follow the recommended practices for lifting, handling, and transportation of robots. Speak with a mentor if you notice any unsafe robot handling.
- Post-Match Lifting Procedures:
 - Teams must relieve all stored energy and open the main circuit breaker on the robot.
 - Teams must do a quick visual inspection to ensure that the robot is made safe prior to lifting it off the playing field (no dangling parts, etc.)
 - Two people are preferred for lifting the robot. Some teams may use four, but this is not required or encouraged.
 - Teams must use the gate opening to exit the playing field. Climbing over the field perimeter guardrail is prohibited.
- Carts must be safe. They must be easy to control and maneuver and pose no risk to bystanders. If a Safety Manager observes a cart behavior which they believe is unsafe, they should discuss the practice with a team mentor and possibly recommend ways to increase cart safety at this and future events.
- Participants should make those around them aware that a robot is active or about to become active. To prevent accidental contact with an active robot, teams should clearly mark the robots operating area and not allow people inside this volume when robots are enabled.

Coaching Teams:

- The Safety Manager will:
 - Remain friendly and mindful of the team experience during every interaction, even when providing recommendations or corrective guidance.
 - Provide positive verbal feedback for safe behavior and conditions.
 - Indicate unsafe behavior and coach to correct unsafe behavior

Positive verbal feedback is provided to recognize and encourage safe behaviors. A positive focus helps participants understand what they should be doing (rather than not doing), increases their receptivity to coaching, and is ultimately far more enjoyable and effective than a negative approach.

- Our goal is to create a culture which emphasizes “teaching safe decision making” and NOT a culture of “safety enforcement.”
 - During interactions with teams, try to encourage introspection – we want students to think about what they’re doing before they act.
 - “Ask yourself: Do you feel confident or hesitant about what you’re about to do?”
 - Don’t correct, Teach: Helping team members learn to be thoughtful and deliberate before making decisions around safety is the best thing we can do to keep them safe for the long term.
- If an issue arises and the team is not collaborating with you to resolve it in a friendly and respectful manner work with the event manager and/or *FIRST* Staff to resolve any safety issues.

Safety All Star

- This recognition identifies Safety Captains that have gone above and beyond in making a noteworthy contribution to promoting a culture of safety. Each winner will be chosen at the discretion of the Safety Manager with input from teams through the Safety All Star cards (obtained from VC).
- Teams should be instructed to submit the cards before the deadline pre-determined in collaboration with the Event Manager so the Safety Manager can pick a winner.
 - The student should be presented with the Safety All Star pin (obtained from VC)
 - The student should be announced via the PA in the Pits (as applicable).
- 1 winner is selected on each day of the competition and should be selected by midday so the winner can be recognized via pit announcement before the event is over each day.

Safety Captain Meeting Talking Points

Use these talking points below when conducting it and be sure to keep them available for reference during the meeting:

- Be Safe, Be Kind, Be Gracious. Instilling a culture of safety throughout the build season, including at *FIRST* events, is a fundamental goal of *FIRST*.
- The Safety Managers are here to help you promote safety during these events and especially in the heat of competition. We'd love to hear about your team's approach to safety!
- **New this year!** Please pick up a Safety Captain's Button from Pit Admin if you would like one.
- Serve as a safety ambassador for *FIRST* at the event and be a proponent for the *FIRST* culture of safety. Escalation of safety matters should be made through your mentors or, as appropriate, with the event safety advisor(s).
- Pit station = Includes your individual pit and all adjacent aisles. The pit area begins when you enter the designated area, usually near the pit administration desk or safety glasses station.
 - Safety glasses are always required in the pit area and on the competition field. *FIRST* needs your help encouraging everyone to follow rule. Please ask your team members and spectators to wear proper eye protection and politely guide them to the safety glasses station if they do not have proper eye protection. Wear ANSI-approved, UL-Listed, CE EN166 rated, AS/NZS certified, or CSA rated safety glasses.
 - Reflective lenses are prohibited; your eyes must be clearly visible to others; however, tinted safety glasses are allowed for general use without need for permission or accommodation.
 - If you wear non-safety rated prescription glasses, you must wear approved safety goggles over them to achieve adequate protection. If you wear safety rated glasses, you may use ANSI-approved, UL-Listed, CE EN166 rated, AS/NZS certified, or CSA rated side shields.
 - Wear shoes that completely cover the entire foot. Shoes must be closed-toed to protect against foot injuries, regardless of work location. Flipflops, sandals, mules, Crocs, lightweight slippers, etc. are not acceptable.
 - Event staff and safety managers will work with teams to adjust any equipment or displays in the pits which extend above the 10-foot height limit.
 - Children 12 and under must be accompanied by a person 18 or older at all times.
- Practice safe robot transportation principles.
- No open flames are allowed in the arena venue, except by authorized personnel and in approved locations (such as the machine shop).
- Report all injuries and illness to the EMT stationed near the pit administration desk.
- Safety Awareness and Recognition:
 - For those who see students they feel are worthy of additional recognition, Safety All Star cards can be filled out by each team and turned in to pit administration. Safety Managers will use this information to help select the winners each day.